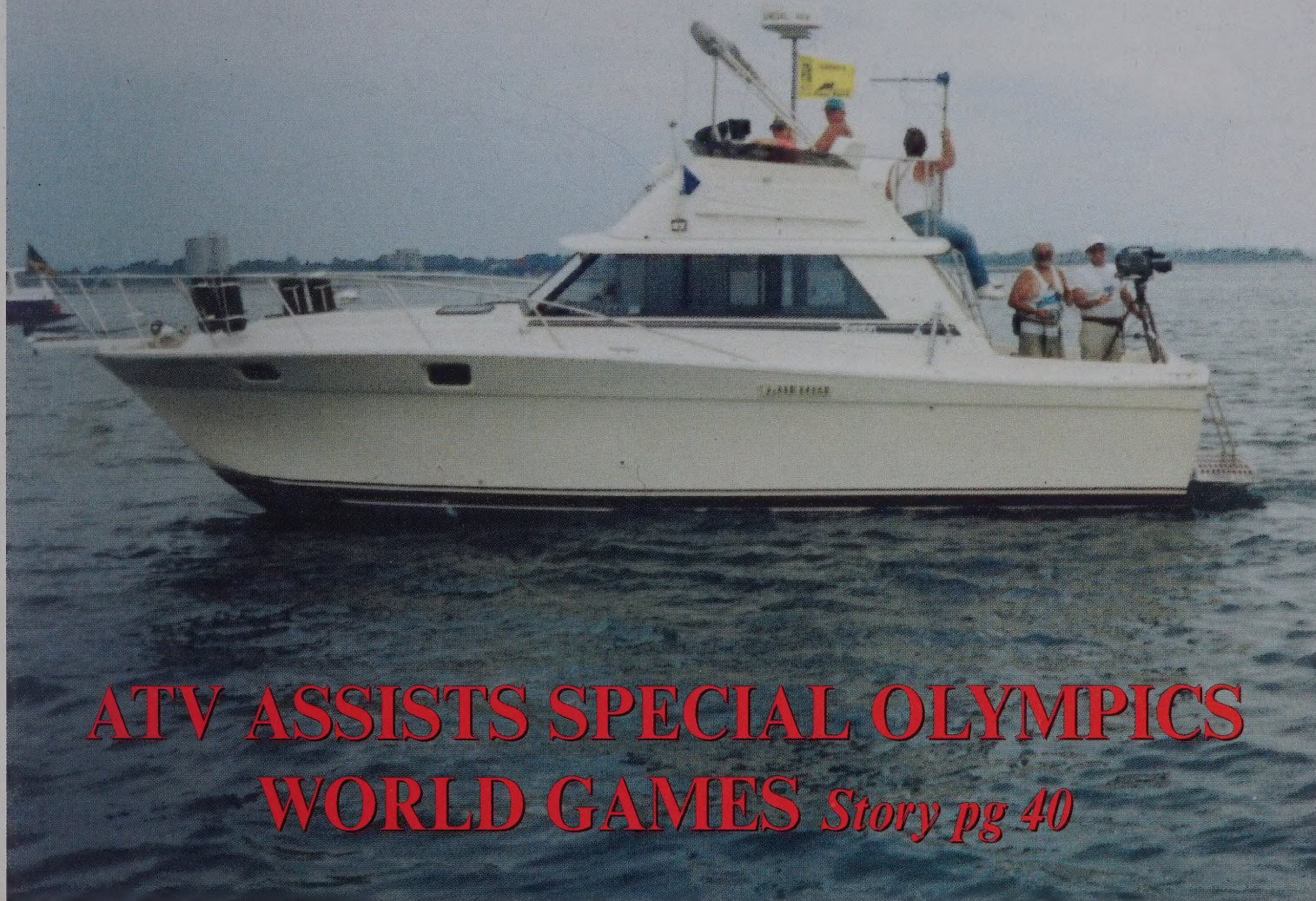


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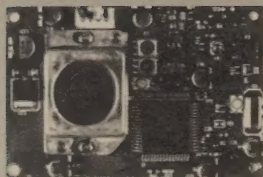
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**ATV ASSISTS SPECIAL OLYMPICS
WORLD GAMES** *Story pg 40*

INSIDE:

**MACC PIRATES ATV FREQUENCIES
build: 13 CM ATV EXCITER
NEWS. PROJECTS. AND ATV FUN**

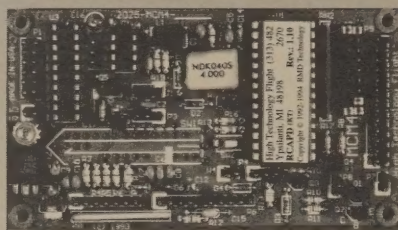


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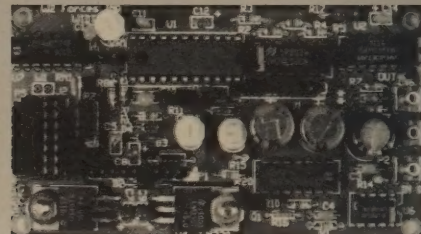
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Data

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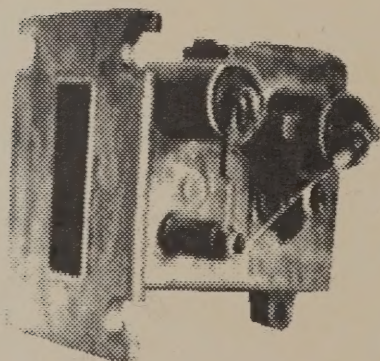


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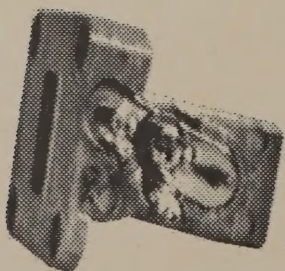
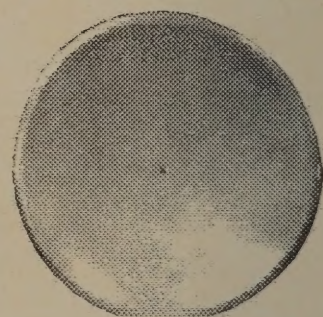
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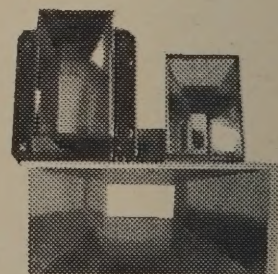


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COVER PHOTO

Special Olympics and Amateur Television

Photo is of Frank Way's cabin cruiser, the CLASSEA, with Ray Ponticelli - N1GBI, and Fran Miele -N1GAU by the SUPERCAM. Dave Saunders, a non ham is rotating the quasi while Captain Frank and Admiral Melissa Way are piloting the boat. Story starts on pg 40.

THIS ISSUE:

This issue was delayed to include the MACC information, specifically, to get a firm date for the next meeting, to be held in St. Charles, MO on Oct 7th BE THERE! The next issue is already started and I am sure there will be a lot of mail/comments after you read this issue. The big issue is the MACC group, without regard to any technology, having squandered the FM repeater frequencies, now wants to shove ATV off the band. They offer nothing in return, except more empty personal repeaters. These are the same people who for years have "coordinated" repeaters into portions of the band already used by other users, deliberately causing QRM. Now, with no technical knowledge, they plunder on, raising strawman arguments to bolster their "recommendation." A clever word. The MACC group can weasel out of responsibility by saying its only an "recommendation." Meanwhile the states will weasel their way through by pointing at MACC saying "it's their recommendation." This is being done without the benefit of FACTS, just opinions and wishful thinking, or more correctly, without thinking of anyone but their own selfish goals.

Get on the phone and the typewriter, computer, etc., and start lobbying your state coordinating body. It may be necessary to file suit in Federal court to stop these idiots. I know of at least one such attempt right now, and it is likely to spread as these "coordinators" try to implement rules without benefit of LAW, without benefit of discussion and consideration of alternatives or technical solutions to what problems may exist, but have yet to be proved to exist. The MACC has set out on an arrogant course which will surely cost them dearly in the near future. 73 Henry KB9FO

Here are some of the notes that pass across my computer screen from America OnLine.

ATVQ on America online

ATVQ on America OnLine:

MONITORING THE SIGNALS!

Subj: Re: LOOKING FOR ATV INFO
(A composite FAQ...frequently asked question)

How can I hook up my monitor to the output of my PC downconverter so I can see the picture? It puts out on channel 3. Can anyone supply a tuner I can use, perhaps surplus.

From: ATVQ
To: atv@exchange.tlh.fl.us

You need more than a tuner. You need to receive channel 3 RF and amplify it and demodulate it to 1 volt of baseband video. This takes a receiver. The easiest thing to do is use a TV set! The converter connects to the TV, the TV is set on channel 3, and you watch/listen to the ATV signals. Using a monitor (a TV without a receiver) requires a receiver (ok, also called a tuner) On the used market you will find cast off cable TV and broadcast monitor receivers, a chassis with a channel select knob or dial, and a few knobs, some have meters to monitor signal strength and audio/video gain controls. But why go to all this trouble? A cheap color TV set runs about \$89 in my neighborhood, and B&W can usually be gotten free at a TV repair shop. New sets run from \$49 and up at K-Mart, Walgreens, Target, Radio Shack etc. So get some moths out of your wallet and buy a cheap TV which you can dedicate to your ham shack!

Subject: RE: LOOKING FOR ATV INFO
From: doug.ferrell@exchange.tlh.fl.us
Reply-to: atv@exchange.tlh.fl.us
To: atvq@aol.com

You are probably right. I could use the existing monitor to display the video before it gets transmitted, then

**REACH ATVQ VIA
E-MAIL from any
computer service :
ATVQ @AOL.COM.**

buy a small TV for the receive side. That is exactly what I do here. Got a cheap 13 inch color tv from the local classified rag and a \$5 color composite monitor for tx monitoring... ..DOUG doug@exchange.tlh.fl.us * 3123 louise st * tallahassee fl 32304-2724 (904) 575-7119 voice * (904) 575-6577 fax * (904) 575-7900 bbs Emergency Medical Dispatcher - Amateur Station KD4MOJ

VSB FILTERS!

Subj: VSB VS DSB AND WHY ANT FILTER - N7HMB

From: atv@exchange.tlh.fl.us
From: tomsmb@aol.com
Reply-to: atv@exchange.tlh.fl.us
To: atvq@aol.com

If VSB is desired, and you want to run more than a Watt, you will for all practical purposes have to use a VSB filter in the transmitter antenna line.

All Amateur "linear" amplifiers intermod products just re-insert the lower sideband sound and color subcarrier components. It is not too hard to preserve somewhat of a VSB video modulated RF signal with inexpensive devices up to a watt, but anything higher power costs a lot - Motorola has a nice 60 watt linear amp with 50 dB 3rd order intermod for only \$2000. Even AEA's 50 watt amp when they had them reinserted the lower color and sound subcarriers to within 10 dB of DSB.

Normal DSB video has the upper and lower color subcarrier at 3.58 MHz no greater than -22 dBc and the 4.5 MHz sound set at no greater than -15 dBc. Broadcast TV definition of VSB says that these lower sideband subcarriers cannot be greater than -60 dBc. In both VSB and DSB, the video carrier is the same power (some people mistakenly believe it is suppressed like SSB voice) and the main video sideband power components are the same out to about 1 MHz. At +/- 1 MHz the typical video sideband power is greater than -30 dBc (see 1995 ARRL Handbook page 12-49 and fig 12.61. Therefore the only significant un-necessary sideband energy is the two lower color and sound subcarriers which are already

down -22 and -15 dBc. These two spot frequencies are usually unassigned +/- 200 kHz in any local technically generated band plan. Except for Repeaters or at any comm site with more than one transmitter operating at the same time, or the band so full that the lower sound and color frequencies must be used, are VSB filters required for engineering reasons. Some areas require them for political reasons. Except for cost and base stations, VSB filters are not practical for R/C, balloons, portable or mobile public service events due to their size. A sound engineering band plan agreed to by a technical committee made up of no more than two of the most technically qualified representatives from each of the mode users in the band is a better way to work out the interference potential. Individual cases can be handled on known two meter coordination frequencies - time shift, cross polarize, minimum power as well as filtering. Tom O'Hara W6ORG

Subj: VSB FILTERS - N7HMB
From: atv@exchange.tlh.fl.us
From: tomsmb@aol.com
Reply-to: atv@exchange.tlh.fl.us
To: atvq@aol.com

There are two sources of single VSB filters for 70cm: International Crystal Mfg., Model FL407 plus video carrier frequency, 1 dB insertion loss and will take over 500 watts. Price about \$300. (405) 236-3741. Spectrum International, Model PSF plus video carrier frequency Plus ATV. 2 dB insertion loss and will take up to 50 watts. Price about \$200. (508) 263-2145.

TX-RX Systems makes a VSB duplexer for inband repeaters. Model 89-65-01 plus transmit video carrier frequency and receive video carrier frequency. Inband repeater frequencies must be at least 12 MHz apart using the same VSB and 17 MHz if one lower and one upper VSB. Tom W6ORG

USED & NEW GEAR

Subj: RE: WHO'S OUT THERE?
From: atv@exchange.tlh.fl.us
From: lazeraud@sentex.net
Reply-to: atv@exchange.tlh.fl.us
To: atvq@aol.com

On Sat, 15 Jul 95 23:51:36 you wrote:

"There is very little used ATV gear available. Most disappears quickly at hamfests. 1200 MHz equipment is available from PC Electronics, Wyman Research, HF Technology and Pauldon Associates, all run ads in ATVQ."

And for the Canadians, check out: MAS Enterprises (owner Manfred Zielinsky/VE3ZIE)
104 King st S., St Jacobs, Ontario, Canada N0B 2N0 PH
(519) 664-1273 FAX (519) 664-3082. 73, Lazer Audio and Electronics, Baden, Ontario, Canada. Tedd Doda (Owner) packet VE3TJD@VA3RWP e-mail lazeraud@sentex.net

NEW STATIONS

Subj: RE: LOOKING FOR ATV INFO
From: atv@exchange.tlh.fl.us
From: thomas_carter@logitech.com
Reply-to: atv@exchange.tlh.fl.us
To: atvq@aol.com

Hi, This is Tom, KC6TNB in Redwood City, CA. I finally had a chance to put up my ATV antenna (tree) this Sunday. So I should be joining the ranks here shortly. So far, I have only been on the receiving end. The local W6CX club has a repeater which has TV input on 1253 MHz and outputs on 427 MHz. It holds the ATV net audio on the same repeater's 2 meter 147.06 every Thursday night. This repeater, everything is vertical, so I got a 15 foot 430 MHz beam, a 10 foot long 1250 MHz beam, and mounted them 5' apart using a 5' mast section, then mounted it on a 15' steel pipe (2" OD) in the center with the 5/8 wave 2 meter vertical on top, then stuck the pipe down my sewer air vent on the roof about 3' down with U-bolt keeping it from going down further. Then ran 3 guy wires. (This is what you do when you don't have a tower... just make sure your sewer vents are metal, not PVC used in the newer houses).

By the way, Webber N6YMF, for your info the W6CX ATV club is currently planning with other ATV clubs to the North, as well as far South as Los Angeles (I think), some kind of ATV mountaintop link which would allow ATVers throughout the length of California to make contacts and even have a net. I don't know how far along it is, or how it will be accomplished, but I will certainly let you know when I find out more info. As far as a video, I think I still have a copy of last October's Halloween net on video which is interesting. Everyone was in costume, some sending NTSC computer generated monsters, etc. I think the net had about 50 or so check-ins.

I plan to buy another VCR here shortly, so will soon be able to make copies if anyone is interested. Or I can try taping another net if you want a recent one. I will see what I can do to make this internet ATV list known to the other ATVers in my area. Tom KC6TNB
Thomas_Carter@Logitech.Com

PIRACY OF OUR AIRWAVES

Elsewhere in this issue is printed the text of the secret Dayton meeting, held on Friday night at the Holiday Inn North, in a room immediately adjacent to the SSTV and ATV meetings. That night, a handful of PIRATES, calling themselves frequency coordinators, conspired to add an item to their meeting agenda: the demise of ATV on 70 CM.

The minutes of that meeting, which document their intentions of eliminating ATV without the consent or comment from the ATV community, innocently dressed as a "recommendation," are printed in this issue. Even the minutes accuracy is in doubt since at least two of the attendees say that the "unanimous" vote to approve the elimination of ATV did not get THEIR vote. *ATVQ also sent a certified letter to each of the people listed as present at the meeting. Their unedited replies are published following the minutes of the meeting. Note that several did not even offer the courtesy of a reply. ARROGANT !!!*

The minutes show complete ignorance of ATV operations, ignorance of technical considerations and read more as drunks on bar stools, arguing about why the FCC is a buffoon. Keep in mind these Bozo's are the one's the FCC is thinking about as the SOLE SOURCE for coordination information! Talk about liars and thieves being in charge of the vault! And I always thought the Government and BIG BIZ was the enemy of ham radio! These people would sink the ship they were riding in rather than learn how to swim for life boat drill. After squandering the frequencies set aside for FM repeaters they want to squander the rest of the bands as well. Illinois has already refused to coordinate an ATV repeater based on the MACC "recommendation."

PIRACY OF OUR AIRWAVES

Well MACC, read my lips:: IF YOU CAN'T DO THE JOB WITHOUT DESTROYING THE BAND PLAN, GET OUT OF THE COORDINATION BUSINESS. HAM RADIO DOES NOT NEED FOUR EMPTY BANDS FOR UNUSED FM REPEATERS AT THE EXPENSE OF OTHER MODES. EITHER COORDINATE AND SERVICE ALL USERS OR GIVE THE JOB TO SOMEONE WHO WILL.

MACC PROPOSES TO TAKE OUR ATV FREQUENCIES, MAKING OUR EQUIPMENT USELESS, WITHOUT COMPENSATION, WITHOUT ANY DISCUSSION, WITHOUT PROVIDING A QUID PRO QUO FREQUENCY FOR ATV OPERATION, WITHOUT ANY OPPORTUNITY TO ADDRESS ANY REAL ISSUES AND THE LOSS OF HUNDREDS OF THOUSANDS OF DOLLARS TO HAMS AND ATV REPEATER OWNERS.

ARE YOU MAD YET??? YOU SHOULD BE!!!

SUE THE MACC BASTARDS TO HELL AND BACK!

SEE HOW THEY LIKE THROWING \$5,000 OR MORE IN EQUIPMENT IN THE TRASH. Make MACC spend as much or more in legal fees defending their ILLEGAL actions as you spent on ATV repeater/home gear.

READ ON FRIENDS>> Henry KB9FO

MAC

Here's what other hams say on the subject:

Subject: Plans to Kill 70cm ATV

From: N5EM@aol.com

To: ham-atv@UCSD.EDU

ATVers Everywhere:

I am wondering what is being said in other parts of the country about a recently surfaced move in the coordination community. First, the ARRL's national coordination meeting in St. Louis this October. State coordination and regional coordination groups are all sending representatives to this meeting to begin discussions about a single point of contact for coordination in the US. It is unclear (and no one is saying) where the impetus for this started. Some say the FCC, wanting to reduce the contact they have with the frequency coordination process. Some say the ARRL because they want to control the whole process. Some say the FCC asked the ARRL to do it so the FCC would only have the ARRL to deal with. Who knows.

The point is, there are already those who see this single point as a means of gaining total control of the frequency coordination process and turning it into a process that would have the weight of rule making. How so, you may ask?

Consider a proposal by MACC (Mid-America Coordination Council), which is a loose council of approximately 20 state bodies. They have proposed that 70cm is not large enough with the demand for repeaters and links to support the wide bandwidth of ATV. Hence, they want to provide a transition period of 5 years during which, all existing 70 cm ATV coordinations would be phased out (by not renewing their coordinations). This, they say, would give ATVers the opportunity to make the transition to 900 mhz. and above and replace the obsolete 70 cm ATV gear.

Further, they say they are going to pressure the manufacturers of 70 cm ATV gear to cease making it with the threat of no coordination support. And as if that weren't enough, the "gentleman" who delivered this proposal to the Texas VHF-FM Society Board of Directors Meeting at the Dallas Ham-Comm this past June made it very clear that those who attend the St. Louis meeting MUST be certified as officially representing their aspect of the VHF/UHF hobby. And, when determining who can and cannot vote, and how much their vote is worth, that the relative importance should be determined by the number of users of that aspect. He specifically listed:

pirates

VHF-FM (Repeaters, Links, Control)
Amateur Satellites
Packet Radio
Small Signal Terrestrial
ATV

(Yes, in that order of importance.) Now, I am not writing this memo in order to be an alarmist. There is a lot that [has] to happen (read that, go wrong), before this comes to pass, not the least of which is that 50 state coordinating bodies have to (more or less) agree on something. That would indeed be a singularly rare occurrence. Further, there are plenty of us on ATV that will not turn repeaters off simply some demagogue decides that they will un-coordinate them. In fact, it is entirely likely that nothing short of an FCC Rule making can force 70 cm ATV off the air. But this is something worth getting involved over! If you are not involved in your state coordination process, GET INVOLVED NOW! In Texas, we have elected two board of directors to that body in the last two years that have broader interests than just FM Repeaters which, I assure you is all that 99% of the membership cares about.

If you leave the politics and annoyance of involvement to the other folks, you may lose what you have in a relatively short period of time. A few thoughts on other things we should be doing. Document every bit of public service you are involved in. Get numbers of people who are involved with ATV, even if they are not amateurs. When someone says that there repeater serves 50 people, how many people are served by your ATV repeater? Don't forget to count all those who receive information during shuttle missions who never transmit. During your coverage of public service events, how many non-amateurs come into contact with ATV?

Eventually, someone will have to draw together facts and figures to shut down the FM folks who view ATV as 6 MHz. of bandwidth used by 20 people. Never mind that they are completely ignorant of what goes on with ATV. If they have the stage, who will the audience hear?

I would appreciate hearing what you, in the larger ATV community think about this and what you are hearing in your area. 73 Ed Manuel, N5EM Treasurer, Houston Amateur Television Society, Inc. n5em@aol.com

Subj: Re: 70 cm ATV Standards

From: ATVQ

To: N5EM

Good thoughts and facts. Let me add that eliminating repeaters does not eliminate ATV. In looking at the strawman arguments of MACC, one point overlooked is that ATV concentrates on usually one frequency / channel. Nationwide, wither 439.25 or 434.00 for CA/FL. Folks above the A line cannot use 421.25 or 420-430.00 period.

Repeater came about because repeaters allow a lot of low power stations to communicate via the repeater. This increases activity, but also concentrates users to a single frequency or frequency pair. By removing repeaters, these home stations will have to increase power in order to communicate. They will also have to duplicate transmissions for stations in different directions because ATV'ers use highly directional antennas, using more spectrum/time. The likelihood of more than one frequency for multiple QSO's rises since stations A/B communicating may not be able to include station C, off to the side, so C uses another frequency to talk to yet another station D who could not see/hear A or B. They move off of 439 to not bother A/B.

Unfortunately, FM repeaters are now ego symbols and it seems everyone must have a repeater so that Ham X can use his H-T to talk to his buddy ham Y on their private machine, or to put multiple bands at the same site. If the two meter repeater at a site is usually empty (and it is) why do you need another band repeater at the same site, serving the same area to sit idly by? Redundancy? Back-up? Can't wait for the pay phone or cell phone channel?

I can hit my local repeater with an ERP of about 1.4 KW ERP, 40 watts to a gain antenna. To operate with other stations I may have to use my entire 1 million watts ERP, (1500 watts to a gain array) which is nearly 29 dB more likely to find some feeble FM talkie user than my 1.4 KW was, even from my QTH 50 miles from the Sears tower in Chicago. So FM'ers take your choice...listen to my megawatt or my kilowatt. Are you sure you don't want a repeater!

Simplex ATV is alive and well, including DX. With the range reduction at 900 MHz and 1200 MHz due to foliage absorption, non DX range is severely limited. This is great if you want to engage a lot of short range QSO's, such as you might want to do in FM mode, but essentially prevents ATV operation in many areas because of the 24 dB more signal required for video, plus the 6 dB gain to compensate for frequency difference and the 0 to 10 dB of path loss from absorption.

AEA produced a prototype 900 MHz atv transceiver but never marketed it because they tried it in the Seattle area and found they could not ever transmit 5 miles line of sight because of signal absorption.

Lastly, lets not forget ATV usually operates horizontal (yeah, a lot of repeaters are vertical) and FM is nearly always vertical. Thus a 20 dB or so isolation factor already exists between ATV and FM modes.

For this and a host of other technical reasons, like directional antennas for ATV and most FM'ers use some form of vertical omni antenna, especially mobile(!) there is very little likelihood of interference problem to FM from ATV, its always been FM interference to ATV. So the whole MACC argument is full of bunk. About commercial TV standards for ATV. Having been in broadcasting for 30+ years, the repeaters I am familiar with (ATV) already are close to commercial TV standards in output bandwidth. You will never achieve it in home station use because of the cost of VSB filters which by their very nature limit operation to one channel. At the same time I don't hear anyone complaining about the non filtered output of FM transceivers and the splatter of solid state amplifiers except at community radio sites.

Any amplifier sold today for ham purposes generates IM distortion no matter what the mode of the input signal is. This IM distortion generates additional sidebands, and noise which is very broad in nature because these amps are not bandpass filtered. The only limitation to their bandwidth is the "tuned" circuits to couple stages or input. Go sweep one of the amps and tell me if it doesn't pass at least 50 MHz bandwidth!

ATV who use tube type power amps are already bandwidth limited by the impedance of the amps. The K2RIW is about 3 MHz bandwidth, great for B&W but seldom passes color or sound, and the Henry 2004 is about 4 MHz, the 3004 is about 2 MHz. Henry will even tell you they do not recommend the amps for ATV because they are so narrow! Well in DX, we only need 2 MHz to get our call letters seen. so 1 megawatt ERP with 2 MHz bandwidth is OK. Yeah, a megawatt. 1500 watts PEP + 27 dB antenna gain from 8 yagis, which makes for a very narrow antenna pattern too. Don't forget the antenna pattern does most of the work in reducing interference by limiting the direction in which the signal goes. Unlike FM users who blast the entire horizon with omni gain antennas. Well, so much for now, 73 Henry KB9FO

MACC PIRATES

Subject: Plans to Kill 70cm ATV
From: steve@media.mit.edu (Steve Mann)
Reply-to: steve@media.mit.edu
To: N5EM@aol.com
CC: ham-atv@UCSD.EDU

There is something very nice and simple about 70cm ATV. True that the higher frequency units (e.g. 902-928 MHz) have fallen in price to the point where they're affordable by amateurs, but there is still something nice about having some ATV channels in the normal range of what a normal TV set can pick up, allowing "newbies" to get started with an ordinary TV set and its ordinary UHF antenna, receiving ATV, and introducing themselves to this world of fun and excitement.

Much of amateur endeavor is driven by serendipity. Most amateurs start out gradually and get more and more interested, and are "tinkerers" more than "planners". Therefore, having a very easy path into this hobby is more important than, say, another hobby that is characterized primarily by the plan-ahead mentality.

The low frequencies make it easy to build a rig from scrap transistors salvaged from discarded materials (and salvage from garbage in itself, in addition to allowing those of lesser means to participate, makes the planet a greener place). Although "home-brew" units built by newcomers might not be as "tight" in their "6 MHz" bandwidth, typically the power is low, on the order of 100 milliwatts. Now even on voice, 100 milliwatts is not much, but on ATV, when you take that 100 milliwatts and spread it out over a thousand or so times the bandwidth (a picture's roughly worth a thousand words, and so to is video worth a thousand voices), the power spectral density at any one frequency is so low as to be of little or no consequence to users of voice communication, especially FM voice communication where a tiny dribble of background noise will not be "captured" by the PLL, or whatever, in the receiver.

Now repeaters, on the other hand, with their high power outputs, *do* pose a threat to voice communications if they spill out of their intended bandwidth, but I think it is safe to assume that repeater operators are more experienced amateurs, and that they have the means and experience to make a "tighter" transmitter. And having some repeater outputs on "cable-ready" channel 58, 60, or whatever, is important to the health of the amateur community, and the attracting of new members to this community. 73, —steve N1NLF

Subject: 70 cm ATV Standards
From: N5EM@aol.com
To: stevem@W6YX.stanford.edu
CC: ham-atv@UCSD.EDU

On August 7, 1995 you wrote:

"I do, however, have one gripe about the ATV community using this spectrum and that is their bandwidth is really NOT 6 MHz! Very few amateurs actually run spectrum efficient VSB equipment which limits the bandwidth to 6 MHz. There is very little equipment like this available to amateurs. Even the AEA transmitter, which claims to have a VSB filter, turns into full DSB as soon as its signal hits a "amateur grade" linear amplifier. Many of the complaints from FM users are, in fact, valid since many link channels fall within the undesired lower sideband of poorly constructed ATV stations. Steve Muther WF6R stevem@w6yx.stanford.edu"

MACC PIRATES

Subj: Re: Plans to Kill 70cm ATV

From: ATVQ

To: stevem@w6yx.stanford.edu

You are right, we do not use 6 MHz. We use a lot less. Look at the spectrum and you will find 95% of the energy is within 1.5 MHz with a small amount centered at +3.58 and +4.5 for sound and color. The lower sideband is also present, usually at a reduced level, and I have yet to find anyone who can show that a signal - 50dBc in AM can interfere with an FM mode receiver. Which is why so many FM mode repeaters work just fine in the middle of the ATV signal, but on the other hand the ATV signal is wiped out by the FM repeater signal because we use an AM detector which is swamped by the stronger FM carrier.

FM is also a waste of spectrum. Repeater should use SSB. The time has come for technology to be used on voice VHF too. Today's stable frequency control makes it perfectly useable to have fixed frequency SSB operation. Further, FM occupies 4 times the bandwidth necessary ($2X$ deviation + $2X$ modulation frequency = FM bandwidth) so 3 KHz speech, takes $3X2 + 5X2$ (frequency twice + deviation twice) = 16 KHz. SSB would take only the 3 KHz, more than a 5 fold increase in frequency usage. SO THERE!

ARE THE BANDS FULL???

I did a frequency use study. I set a scanner and computer to log any squelch breaks and to scan the entire 50, 144, 222, 440, 1240 MHz repeater bands every 15 minutes. It did an accumulation of activity by band which included input and output frequencies. Here in Chicago, the use of 6 meters was ZERO. The use of 2 meters was 7% MAXIMUM, mostly ZERO. 220 MHz was 1.1% maximum and the "overcrowded 70 cm band" was in use less than 2.5%, nearly all during morning/evening drive time. There was no usage on 900 or 1240 MHz bands.

I drive an average of 3-4 hours a day to commute to/from work. In two years I had 1 QSO on 1, 1240 MHz repeater, a ham using an H-T at work but several SSB/DX contacts at 1296. On 6 meters, in two years, several 52.525 qso's even some DX but only pre-arranged QSO's on the one active 6 meter repeater! I sold the 220 rig after three years of only hearing packet and three QSO's. Probably if it weren't for the presence of my old friend Art Reis W9XI, "Mr. 220 Notes" the area 220 would be as dead as 6 meters.

Read Bill Pasternak's W6ITF Repeater column in the latest World Radio, where he documents virtually vacant 2 meter bands in New York City and Carolina. A stunning tribute to the "crowded bands." HA!

So before MACC or anyone pirates the bands for more redundant FM repeaters to order Pizza and autopatch the spouse, why not use the empty bands they already have NOW! 73 Henry KB9FO

Another comment:

Steve,

Thanks for your response. You are correct on all points. We, in Texas, seem to have arrived at a consensus that the time is rapidly approaching to eliminate all user inputs on the 70cm band, reserving only outputs. This would do away with all the low-cost DSB ATV gear out there in user hands (as well as the AEA VSB boxes). As to the outputs of VSB ATV repeater transmitters, we have just recently circulated a document of ATV Standards for repeater construction and operation. This document was put together by ATV operators in the Dallas/Ft. Worth area who are also involved with commercial television. The document is a way to provide ATV operators with the minimum technical standards (and means to achieve those standards). These standards, by the way, mirror technical standards published for commercial television. After comments and corrections are finished, it is hoped that this will solve problems like you mention.

In Texas, ATV is a long time operation, but that is not reflected in the experience of the operators. For many years, ATV was a small group of dedicated people who worked at what they enjoyed but never grew to the large numbers necessary to support a complex and expensive repeater system. Today, the situation is very different. We are attracting new people to ATV every month. Most are not very knowledgeable about television and we are teaching them. In some places, that level of expertise is growing but hampered by the lack of available, suitable test equipment. Our goal is to draw ATV groups together in Texas to provide mutual support in all areas, such as education, hardware and testing.

MACC PIRATES

We operate a repeater in Houston that, according to my information does not bother any link channel operating below our carrier at 421.25 mhz. We do cause some problems above as a result of our video id'er, but that is to be soon cleared up with a new video low pass filter. We have much more problems with interference from links that have been coordinated between our video and aural carriers (separate transmitters). Note that that is interference FROM links to ATV user reception. Hopefully, a change to horizontal polarization in Houston will dramatically reduce that.

We are strongly committed to keeping 70cm output for our ATV repeater. I would prefer a national, protected channel of 421.25 mhz. This would remove all ATV user inputs in this band. Further, the other commonly used ATV output frequencies of 426.25 and 427.25 are not really usable at this time. 426.25 is too far off standard cable channel 58 to reliably lock on all sets and 427.25 places the aural carrier at 431.75, which is out of the allowable repeater sub-bands. Optimally, we could get the commission to change the rules to allow the 427.25/431.75 frequency combination. This would give 2 frequencies to coordination bodies to provide some flexibility. In any event, the goal would be to separate the link users and ATV users so that each operates in protected spectrum. This is being discussed in meetings now in Texas. No formal proposal is yet available as there are still issues, primarily the 431.75 matter.

What is the attitude of coordination group/s in California? I would be very interested in hearing what they propose 73 Ed Manuel, N5EM N5EM@aol.com

Subj: Re: Plans to Kill 70cm ATV

From: ATVQ

To: steve@media.mit.edu

re: repeater power and bandwidth.

An ATV repeater must have a filter (if inband) or it wont work. I know of no repeater which is not already highly filtered because of the need to protect its own rx from its own tx, whether on one or two antennas. The combine filter by TX-RX already reduces the bandwidth of the emitted signal to 6 MHz or less. The video content also reduces the bandwidth since nearly all the sidebands are more than - 50 dBc, which is a lot more than any FM transmitter.

Transmitter white noise is also less on ATV since we must filter the output. A average FM transceiver generates white noise across the entire band. FM Theory also says there are infinite sidebands to FM modulation! The typical solid state amp used on FM mode (don't tell me you don't use one) also generates a huge amount of white noise and intermod noise. Mirage is very dirty in this regard and the SSB operation causes splatter many tens of MHz wide. so much for FM/SSB being narrowband. Many of the Mirage high power amps also oscillate (spurious emissions) when hot. The typical 300 watt Mirage amp will wipe out all of 6, 2 and 440 with continuous output spurious oscillation when it gets hot.

If ham radio has as one of its tenants of existence the purpose of experimentation, buying another Icom FM repeater and putting it on a building doesn't compare with assembling your own ATV station and ATV repeater which you cannot buy off the shelf. You have to have some technical knowledge to build and run an ATV repeater, not true of the plunk down your Visa card FM repeaters you buy from HRO or AES.

And don't forget, never before has a group of users told a pre-existing group to get off the band. That's right, ATV existed at least 30 years before FM repeaters. I know, I was there when the FM repeaters got started and helped re-write the rules by appearing before the FCC in the early 70's to ALLOW FM REPEATERS. (OK curse me its all my fault as WB8HEE circa 1969-1975) Lest you forget dockets 18803 and 20777 and others of the time.

The MACC motion is nothing more than piracy of the airwaves. After wasting and plundering the repeater portions which were set aside originally to allow FM repeaters to co-exist with other band users, the camel now wants to push everyone else out of the tent. To mix my metaphors. 73 Henry KB9FO

MACC PIRATES

Subj: Re: Plans to Kill 70cm ATV

From: ATVQ

To: stevem@w6yx.stanford.edu

I have never in 25 years found a valid interference or heard of a valid interference problem between an ATV signal and any FM link or repeater. If you have actual evidence, let me know. I would like to hear about it. I have even operated 439 ATV simultaneously with 444 Fm and 432 SSB from antennas less than 10 feet apart without interference from the ATV signal. 73 Henry

Subject: Re: Plans to Kill 70cm ATV

From: stevem@w6yx.stanford.edu (Steve Muther)

To: ATVQ@aol.com

WD6GYH operates a repeater in the south SF bay area with an input on 427.25 MHz. He has, at times, received complaints from an FM repeater operator using 420 MHz link frequencies. The complaint comes from interference caused by the undesired lower sideband audio subcarrier getting into the link frequencies. That's one example I can think of. Please don't misunderstand my point of view. I operate and maintain a ATV repeater in the SF Bay area also. I do believe in sound technical practices and conformity to the 6 MHz VSB "standard" for any AM ATV operation. Steve Muther, WF6R

Subj: Re: Plans to Kill 70cm ATV

From: ATVQ

To: stevem@w6yx.stanford.edu

The question is why is WD6GYH using 427.25 as an input? Likely to avoid interference from FM in 438-450. The SO cal systems use 434. The input at 427.25 does not cause interference, **it is the USERS (home) stations on 427.25 that cause the problem.** The home user should be using a VSB antenna line filter when using that particular system. So it is not the repeater, but the users on the input frequency which are the problem. **The users will likely be there with or without the repeater.**

Washington DC flipped from 439.25 in to 421.25 in because there were up to 22 notch filters to eliminate interference from FM repeaters. Inverting there input/output solved their problem and I have not heard of any complaints from users on the input. I will have to check with WR4AAG world's first ATV repeater builder for an update. Thanks. 73 KB9FO

HERE IS THE RESOLUTION OF
PIRACY AND THE GANG OF
PIRATES>>>>>>>>>>
READ CAREFULLY!!

MID-AMERICA COORDINATION COUNCIL, INC.

FREQUENCY COORDINATORS' MEETING SUMMARY

April 28, 1995

Meeting was called to order at 2:10 pm by Chairman Whit Brown, WBCJX.

A) ATV activity on 70 cm was discussed at length, in particular:

1. ATV 434/439.25 MHz incompatibility with satellite operations in 435-438 MHz spectrum. (Satellite ops are confined to 435-438 MHz by law.)
2. ATV 439.25 MHz incompatibility with long established, coordinated repeater inputs/outputs from 440-445 MHz.
3. ATV 421.25 MHz incompatibility with repeater/remote linking and control.
4. Unfiltered 421.25 MHz operation extending out-of-band below 420 MHz.
5. ATV 427/439.25 MHz incompatibility with packet operations, including wide-band channels recommended by ARRL Board in Jan 1988.
6. ATV's inherently inefficient consumption of spectrum, i.e., one ATV QSO consuming 6/12 MHz of spectrum vs over 200/400 25 kHz conventional channels carrying separate traffic simultaneously.
7. Just 3 ATV QSOs, on 421, 426, 439 MHz consuming 60% of entire 70 cm band.

Therefore, due to these incompatibilities and in an effort to pursue a more responsible and efficient utilization of spectrum in 70 cm, and to displace the FEWEST number of operators in the band, the Committee unanimously voted to cease any further coordination and assignment of ATV activity in 70 cm and to encourage present ATV operations to populate those ATV allocations on 902 MHz and above.

Further, the Committee recommends that this transition be completed by December 31, 1999.

A sub-committee has agreed to write a letter to all known commercial ATV equipment vendors explaining our position and request their cooperation in providing equipment in this effort.

B) To accommodate late-comers with repeater channels in already saturated regions, coordinators of states sharing common borders are encouraged to work together to find possible unused or under utilized channels that could become candidates for common Shared Not Protected (SNP) multi-occupant channel(s) that would coexist by utilization of CTCSS.

C) The ARRL's "Single Point of Contact" proposal was discussed along with attendant concerns. It was decided to query ARRL Directors Quiat and Mendelsohn for clarification.

(During following board meeting, Director Quiat stated that this proposal was at the request of the FCC. Director Mendelsohn added that this was in pursuit of the "Holy Grail" and that the details would be revealed and discussed at the upcoming ARRL/Coordinator meeting..."we are to stay tuned"????

It was implied that the FCC perhaps felt that the time was right to bestow official recognition and sanction to coordinators.

D) Concerns of proposed date of June 10, 1995 for ARRL/Coordinator meeting was discussed and deemed too soon to accommodate many key representatives and conflicted with many established events. We would clearly make our concerns known and suggest the ARRL reconsider this date.

The meeting was attended by the following representatives:

Whit Brown, WBCJX, Colorado Council of Amateur Radio Clubs; Neil Rapp, WB9VPG, Indiana Repeater Council; Paul Wynne, AF5M, Arkansas Repeater Council; Wayland McKenzie, K4CHS, Missouri Repeater Council; Paul Gilbert, KE5ZW, Texas VHF Society (Guest); Harold Reasoner, K5SXX, Texas VHF Society (Guest); Jerry Temple, N8MTZ, Ohio Area Repeater Council, Jeremy Ruck, WM9C, Illinois Repeater Association; John Gebuhr, WBCMC, Nebraska Repeater Council; Scot Thompson, WBWOT, Wisconsin Association of Repeaters; Dennis Crabb, WBGGI, Iowa Repeater Council; Tom Crabb, NJLU, Iowa Repeater Council; Dick Isely, WD9GIG, Illinois Repeater Association; John Mackey, KASSF, Western Washington Amateur Relay Association.

There being no further business, Chairman adjourned the meeting at 3:30 p.m.

RESPONSES TO ATVQ'S OFFER

TO ALLOW MACC MEMBERS TO SPEAK THEIR MINDS

Thank you for your invitation to respond to your editorial about MACC's recommendation with regard to the coordination of ATV activity on the 70 cm band. It was with divided feelings that the MACC member frequency coordinators voted to recommend that MACC members states no longer recognize ATV repeater coordinations on the 70 cm band as of midnight, 31 December 1999, and that no additional 70 cm ATV repeaters be coordinated effective immediately. The committee report and recommendation was subsequently adopted by the MACC Board of Directors on Friday, April 28, 1995.

The seven reasons for taking this action are spelled out in the copy of the committee's minutes that I have enclosed with this letter and, if column space permits, I would ask that you publish these reasons.

Neither of these meetings were held in secret, and in fact were attended by persons representing the ARRL and other frequency coordination organizations. The committee's agenda was not completely formulated until the start of the meeting when its members were polled for agenda items; therefore, it was not practical to publish it in advance.

Even though the MACC Board of Directors voted to recommend the phasing out of 70 cm ATV operations, each member organization is free to modify and/or ignore this recommendation. Other regional coordination groups may not follow MACC's lead in this matter. Even if they do, the sky is not going to fall tomorrow.

I am an occasional ATV operator myself and I personally do not want to see the eventual elimination of 70 cm ATV operations. But, I am also a realist and I don't think the ATV community can continue to justify the use of 6/12 MHz for a single QSO in an increasingly crowded frequency band - particularly in our major metropolitan areas. I asked our committee and board to frame a proposal to establish ATV sub-bands on the 90 MHz and 1200 MHz bands which after circulation among the other coordination bodies in the U.S. would be submitted to the FCC as a proposed rule-making.

As you probably know by now, the ARRL has finally succeeded in getting the FCC to consider recognizing amateur radio frequency coordination. As the first step in this process, the ARRL is sponsoring a National Frequency Coordinators/ Meeting to be held in St. Louis, Missouri, on Saturday, October 7th. I do not know the extent of the ARRL's invitation list, but it is my understanding that entities in addition to repeater coordination organizations have been invited to attend and participate.

Therefore, until this issue of FCC recognition has been decided, I would not expect to see any new bandplan proposals submitted for consideration.

I know that MACE's recommendation is causing heartburn in some parts of the ATV community. I have already been the recipient of an angry letter and I expect more to follow. There are no easy solutions left. The advent of the no-code amateur license took them away. In the real world, wide-band communication has to go to higher frequencies - and there is now a growing amount of microwave equipment available to the ATV community to assist in the transition.

I don't like it, you don't like it, and I am sure that most of your readers don't like it. But with the growing density of use of the 420-440 MHz amateur band, I really don't think we now have any choice in this matter. 73. George R. Isely, WD9GIG MACC President

[ED. Received on MACC letterhead. Living not far from George, I can say I have not SEEN WD9GIG on ATV in the last 8 years. Henry]

OREGON RESPONDS TO ILLINOIS/MACC

June 1, 1995

George R. Isely, MACC
736 Fellows Street
St. Charles, IL 60174-3835

Dear Mr. Isely:

I am a board member here on the ORRC (Oregon's coordinating council). However, I write to you as an Amateur Television operator. I was appalled at the policy of MACC toward ATV in the 70 cm band. If the FCC is going to give coordinators more power, those coordinators better do a more responsible job at representing the ENTIRE Amateur body rather than just serving repeater and node owners (which as we know is what these coordinating councils are).

Amateur Television has been on 70 cm before we knew what a repeater was. Amateur television is one of the many nodes that makes this hobby a rich, diverse one. Every single representative that voted for getting ATV off 70 cm by 1999 (I understand it was unanimous) has done a disservice to the whole community...Where will it stop?...When are you going to try to run ATV off 900 and 1200?

I was not aware that coordinating councils now had the right to disregard FCC frequency allocations. It is lucky for Oregon that we do not follow your frequency plan. You have chosen to ignore many successful frequency plans all over the country which include ATV. I am sure this was the easiest solution for you.

Contrary to the point that was made regarding the number of amateurs on ATV...within the borders of MACC members states, there are literally hundreds of ATV operators running both simplex and repeater operation.

As an ATV operator, I do not recognize your authority and we will all see you in court (if anyone dares to take your organization seriously). If you have a need for more frequencies to coordinate then YOU go up to 900 and coordinate those frequencies which are being shared with commercial services. Here in Oregon we use ONE six megahertz channel on 70 cm. This is an input to the repeater and also is used as a simplex frequency. We have officially gone on record as being 100% Vestigial Sideband in Oregon. We use 426.25-431.25. This leaves the lower for links and above for satellite and voice repeaters.

I would strongly recommend that the FCC not give you further powers until your organizations can show that they represent all of us and that we are welcome to participate in your policy parties.

Ed Mellnik, WB2QHS
3210 S.W. Dosch Road
Portland, Oregon 97201

RESPONSES TO ATVQ'S OFFER TO ALLOW MACC MEMBERS TO SPEAK THEIR MINDS

WISCONSIN REPLIES

Thank you for allowing me an opportunity to respond to your letter dated 10 June 95 before you published an editorial on the 1995 MACC meeting that was held at the Dayton Hamvention on the 28 April 95.

First, this meeting was not held in secret.

As you may or may not know, the MACC does not dictate rules for repeater coordination. Each state or region that is a member of MACC is autonomous.

With regard to the issue of 70 cm inband ATV, I have to agree with the other states that this needs to be looked at. However, I do not believe that a legal mode be eliminated from possible repeater application due to isolated reports of interference.

If we look on the other side, we see that the VHF/UHF users have grown exponentially with the implementation of the no code license and that the majority of the individuals are going to use FM, Packet and the Satellites. So with this, how do we justify our consumption of 70 cm spectrum?

I can only speak for the Wisconsin Association of Repeaters (WAR) and can state at this time, Wisconsin does not have any known problems with inband 70 cm repeaters or their users. WAR strongly encourages the use of frequencies from 33 cm and up for ATV usage.

If individuals or groups want more information, have them contact their state or region coordination group.

Regards,

Scot E. Thompson, WBWOT
WAR Technical Director
Wisconsin MACC Director

PS I have been active on ATV since 1985 and own and operate a 70 cm inband ATV repeater.

ILLINOIS, FIRST TO DELETE ATV

70 CM ATV PHASE OUT

On April 28, 1995, at its annual meeting in Dayton, Ohio, the MACC Board of Directors approved a recommendation to its member frequency coordination organizations which, if followed, will eventually phase out all 70 cm ATV repeater operation. Specifically, MACC recommends that all existing 70 cm ATV repeater coordinations be vacated effective midnight, 31 December 1999...and that there be no new 70 cm ATV repeater coordinations effective immediately.

The reasons given for this phase out are as follows:

1. ATV incompatibility with satellite operations in the 435-438 MHz spectrum. (Satellite operations are confined to 435-438 MHz by FCC rule.)
2. ATV 439.25 MHz incompatibility with long established, coordinated repeater inputs/outputs in the 440 to 445 MHz area.
3. ATV 421.25 MHz incompatibility with repeater/remote linking and control.
4. Unfiltered 421.25 MHz ATV signals extending out of band below 420 MHz.
5. ATV 426.25 & 439.25 MHz incompatibility with packet operations, including the wide band channels recommended by the ARRL Board of Directors in January, 1988.
6. ATV's inherently inefficient consumption of spectrum, i.e., one ATV QSO consuming 6 or 12 MHz of spectrum vs. over 200 or 400 25 KHz narrow band channels carrying separate simultaneous traffic.
7. Just 3 ATV QSOs on 421, 426 and 439 MHz would consume 60% of the entire 70 cm band.

The Mid-America Coordination Council is the first regional coordination entity to take this action. But several other organizations are considering similar action. What was a sparsely populated band a few years ago is now approaching saturation in metropolitan areas. It is a growing consensus that 6 MHz wide ATV signals can no longer be justified on the 70 cm band. At the same time, there is now a growing quantity of 902 and 1200 MHz ATV equipment now available to help in the transition to the higher frequency bands.

MACC member organizations do not have to follow MACC recommendations. However, the IRA supports and follows the MACC Coordination Guidelines and as such will follow this recommendation unless either the membership or the Board of Directors votes to do otherwise.

At present, there are no nationally designated ATV sub-bands in these higher amateur frequency allocations. The IRA intends to draft an ATV sub-band proposal for consideration by MACC. ATV operators in Illinois are invited to participate in the drafting of this proposal.

October 7th, in St. Charles, MO, (St. Louis) there will be a meeting of MACC. If you can be there and participate, let Jay at ARRL know, 203 594 0241. Protect your investment!

ILLINOIS DOUBLE SPEAK THIS EDITORIAL WAS IN THE SAME ISSUE (NEXT PAGE!) AS THE RECOMMENDATION TO KILL ATV (SEE PARAGRAPH TWO)

WHO IS A "FREQUENCY COORDINATOR"?

Frequency coordinators are those individuals (some backed and financed by organizations of owners and users) who actually assign or grant a frequency coordination within a defined geographic area using commonly accepted technical and geographic criteria.

Now this is obvious to virtually all of our IRA members and others who may read this newsletter. But what is not so obvious to some here in Illinois and our surrounding states, is that a "frequency coordinator" must, by FCC standards and policy, perform his function in such a way as to accommodate the interests of all the users of the amateur spectrum affected by the proposed frequency coordination.

Within Illinois, we continue to receive frequency coordination requests that can not be granted due to conflicts with existing frequency coordinations in our neighboring states. Most of the time this is due to ignorance or lack of proper research on the part of the requestor - or maybe even wishful thinking. In all cases, we have turned down such requests unless the appropriate waiver(s) can be worked out with the holder(s) of coordination in the neighboring state.

However, our efforts to cooperate along our borders have not always been reciprocated by our neighbors in Indiana, Kentucky and Wisconsin. Over the past several years, we have seen repeaters short-spaced against pre-existing frequency coordinations in Illinois without any sort of notification to our frequency coordinator, or our affected holders of coordination. And in some cases, where notification was made and an agreement was worked out, the terms of the waiver were subsequently violated and the resulting complaints have been ignored or brushed aside.

The ultimate purpose in communicating with neighboring frequency coordinators and working out and adhering to mutually agreed waivers is to insure that the grantor of a frequency coordination is fulfilling FCC requirements by indeed acting in the interest of all affected spectrum users on both sides of the border.

In the past some of our neighboring frequency coordinators have sometimes failed to meet this requirement causing much on going interference to pre-existing frequency coordinations on our side of the border. For all intents and purposes, these past actions invalidate their status as coordinators - if someone chooses to make an issue of it. Therefore, frequency coordinations made under these conditions could be challenged as deliberate interference before the FCC.

At our 1995 Annual Meeting, a change in Illinois frequency coordination policy was tabled for further consideration. This policy, if approved, will enable our frequency coordinator to use the same defacto cross-border short-spacing criteria in those areas where it is now being used.

Right now Illinois continues its past policy of close adherence to the MACC Frequency Coordination Guidelines. We will continue to press the coordinators and their organizations in the previously mentioned states to sit down with us and work out an agreement to prevent future problems and to clean up the existing ones. But if these interference problems continue unabated, our policy will eventually be changed to the detriment of all concerned.

Bob Hajek, W9QBH, President

To make matters more difficult, the Illinois Repeater Association wants to "license the publication of the Frequency Coordination Database" and discussed copyright and the **RATES TO BE CHARGED!** Want to search for a frequency? you have to **PAY** first for the right to read the data! Just more **ARROGANCE** from the Frequency Pirates.

The latest letter to the KB9FO ATV repeater arrived showing **NO FREQUENCIES** for input/output. (page 10 of the IRA newsletter) This is a coordinated repeater! We are also told that another ATV repeater group in Illinois was already **DENIED** coordination, saying the "bands are full." Funny, the IRA never told any of the FM or packet repeaters which were coordinated into the ATV **SIMPLEX** frequency of 438-444 MHz that the "band was already full."

Politics at its best: first you create interference, then you complain about the interference you created, then you tell the people you interfere with to **GET OFF THE BAND** while **IGNORING** the users complaints of interference to **EXISTING** operations!

NEBRASKA

John Gaburh WB0CMC of the Nebraska Repeater Council responded by phone and said he **DID NOT** vote in favor of the MACC resolution.

According to another document ATVQ received, five MACC meeting representatives were not even entitled to vote.

RED CROSS DRILL ATV SUPPORT IM- PRESSES OFFICIALS

LISATS supported the Melbourne American Red Cross Tornado Drill with ATV on Saturday, March 11. Red Cross officials were exuberant seeing pictures from the simulated disaster sight in Palm Bay. Video transmitted by mobiles W4BAL, from Comm 1 and K4GCC, were sent to K4RBD's van at the Red Cross HQ. WTPB manned control, and the team was supported by W4JMX, WD4MJJ and KC4YEW. Permanent ATV antenna and downconverter are planned for the HQ by PCARS.

BULLETIN!!

A Port St. Lucie ATV group has applied for 434.0/421.25 pair to the Florida Repeater Council. The Council has advised them of LISATS coordination. K4ATV ran a test with them recently. It appears LISATS will not receive interference. If there was interference, the PSL group would have to seek another pair.

THE INDIANA AMATEUR TELEVISION AND UHF CLUB NEWSLETTER

We have all participated in balloon launches, but the one Bill helped with at Huntsville a few weeks ago was probably the most successful of all the many launches that I have monitored. You remember that I saw it in brilliant color at the peak of the launch and when the balloon exploded. The signal did not vary as it fell toward the earth. Bill will have that balloon package along. He will also cover many aspects of the ATV world since he has been ATV editor of 73 magazine and helps Henry Ruh with the publication of ATV Quarterly.

Dayton Hamvention has come and gone. Paul Bohrer, W9DUU, was a forum moderator this year. Malcom Mallette, WA9BVS, gave one of the talks on direction finding and will soon have an article in QST of the subject.

The Friday night ATV meeting and the SSTV meeting at the Holiday Inn North was standing room only. I was told at the desk that they had special rates for Hamvention guests this year. Normally the rooms are \$83 plus tax per room per day but the SPECIAL hamvention price was \$93 plus tax only if you rented the rooms for three days, a total of over \$300. I guess that this is a way to spread the wealth.

For those interested in SSTV, this year was especially interesting. My guest speaker from Hawaii/Japan, Izumi Soma introduced a newer model of a very small SSTV scan converter. I beta tested an earlier model last summer by operating it in the car all year. This newer model was in operation in Booth 212 next to our booth at the hamvention. I will have one of these operating at the meeting. It has all modes, such as Scotty, Martin, AVT and Robot. It can be connected to a computer for control. I feel that it will be a great success. Stay tuned for late developments.

We need much more activity on the repeater. We have one of the best operating repeaters in the country. So many people just look at the output rather than get on and show something from their station. We would like to see your homes, cars, family and any other personal interests in which you may be involved.

Wyman Research sold out of F0-22 antennas. Tom Rutland died in February and so far no one has picked up the product. Down East was at Dayton under a new name, Directive Systems. Mirage has sold to MFJ.

ATN EAST ATLANTA ATV GROUP WORLD WIDE WEB SITE

<http://www.mindspring.com/nrwf>

Hog fence antenna plans
Mog amp plans
Pics of users
and soon...

ATV rptg output on the web

N4NEQ ATV rptg
1253 MHz FM in 427.25 AM out

I would like to place the following classified ad. in ATVQ, but I don't see where you do this. PLEASE let me know how much it is going to cost before you run it. K3AAF, Bryan Davis, 4612 N.E. 21 Ct., Ocala, FL 34479. [ED. Classified ads are free for subscribers]

FOR SALE:

Qty 3 -- 1100 BKR receivers as described in ATVQ Spring '95 -- pg 55 -- W/HAM software \$400 + shipping, or with commercial software as used in Head End systems is \$600 + shipping. With Maintenance manual. If these sell I can get more.

Qty 4 -- CSD-BQR 1 -- Microdyne Corp's last Sat. Rx. design tunes 950 to 1700 MHz, reads out in L, C, Ku, S, Eu, & Au bands, 5 IF BW 18 - 40 MHz, 4 tunable audio sub-carrier channels tune 5 to 8.2 MHz with selectable bandwidths of 150, 250, or 400 KHz and De-emphasis of 50us, 75us, or flat. RS-232 or 422 remote control. With Maintenance manual. \$400 + shipping.

Call K3AAF at 1-800-784-4633 Ext 268 any time or eve's 904-629-6238 for inquiries or to place order or write me at 4612 N.E. 21 Ct., Ocala, FL 34479

DAYTON ATV FORUM LISATS PITCH WOWS GURUS!!

The LISATS team of K4ATV, KC4TCV, and K4RBD, presented the LISATS story at the ATVQ Magazine ATV Party at the Dayton Hamfest on April 28. Henry Ruh, Editor of ATVQ, stated it was one of the best presentations ever given at the Party, which has been a tradition for several years. With video tape and overhead transparencies, the trio described the LISATS history, repeater design, findings and activities. Handouts were available for attendees.

Attendees included leaders from Southern California's Amateur Television Network, including W6ORG, 73's ATV Editor WB8ELK, ATVQ's Editor, and several others.

Thanks to N4KCI for the graphics, KC4TCV for the viewgraphs, K4RBD for the repeater video, and K4ATV for tech support.

WLRQ TOWER COMPLETED LISATS Heights To Remain Same

WLRQ has completed its new tower, moved all installations from the old tower and has informed LISATS that the installations must remain as they are. This means that the installations must remain on 1 5/8 inch hardline and the transmit antenna on the 7/8 inch line, at slightly lower heights than on the old tower.

K4GCC, with Jim Grossman climbing, is installing longer standoff brackets on the antennas to improve patterns, especially to the northwest.

AT this time, the installation of the 425.75 MHz audio transmitter antenna, on the tower, may be on an existing 7/8 line in use by K4GCC. This has not yet been approved.

The 144.34 MHz user receiver antenna, for screen selection, was damaged and has been down for repair since the tower changeover and users have been transmitting to a temporary antenna. The reinstallation of the user antenna will be done soon.

The installation of 23 and 33 cm vertical omni antennas now appears to not be possible at this site. LISATS will discuss this at the next meeting.

HOUSTON AMATEUR TELEVISION SOCIETY, INC.

Greetings avid ATVers.

We have been perfecting the transmission of the club meetings. We will be transmitting on 1.2 GHz. We will be monitoring the 146.7 repeater for talkback.

This month we will be discussing the recent upgrades to the repeater. We now have a 3 GHz link between the Receiver and Transmitter site, thanks to Rick Pense, WD5BQN. We will soon install the 1.2 GHz receiver at 11 Greenway Plaza with the 440 receiver. This will allow us to install a 1.2 GHz FM transmitter along side the 421.25 MHz AM transmitter.

Please take note! We now have a HATS voicemail/fax/mini BBS system. The number is 713-HOT-FMTV (468-3688). This is available 24 hours a day. When you call the menu system will direct you to the desired service.

On the voicemail side, we currently have a couple of mailboxes and some repeater information messages. If you would like a mailbox on the system, leave a message for Fred Juch in mailbox #1 (HATS or Amateur use only please).

On the FAX back side of the system we have several back issues of this newsletter, General ATV information, notices about Balloon launches, a note from Tom O'Hara of PC Electronics, and a copy of the 600+ mile ATV QSL card from KN4KM Alec Sims of Marianna, FL who saw the W5PZP repeater!

You can send a FAX to HATS by dialing the number followed by about 6 commas then a 4. The BBS can be reached by the same technique and a 5. The FAX back function is currently only operating in the mode where you call from a FAX machine, (no FAX forward). If you are calling from your PC, simply start your FAX software and connect a phone to your FAX board phone jack. Call from the handset and when prompted, select manual receive on your software.

HATS now has an E-mail remaining node. Any mail sent to: HATS@stevens.com (via the internet) will be resent to all subscribed users. This is intended to be a resource for current ATV information. To register, send an E-mail message to listserv@stevens.com. In the body of the message say: subscribe HATS FName LName.

We have replaced the Icom 25A control link receive with a Hamtronics high quality receiver. The tone detection should be dramatically better.

How are you getting this newsletter? It is distributed by E-mail and by FAX. These two modes are the absolute cheapest modes for HATS to use. If you would like to add yourself or a friend to one of these lists, send a message to me via one of the following methods:

FAX at 713-468-3688

E-Mail at N5JXO@amsat.org or

fred_juch@hpatch2.desk.hp.com

You can be on both distributions if you wish. We also have a FAX list that does not have a cover page if you don't need one. (This saves about 3 minutes each.) We will be happy to add club lists or whoever is interested. The E-mail list is preferred since it takes less time to send.

See you at the meeting @ 7:00 pm.

Greetings avid ATVers.

Yes, isn't it great to live in the USA? I hope you had a happy July 4th. Did anyone see fireworks on the ATV repeater camera?

Down to business. The American Society of Mechanical Engineers has decided that it is unsafe for transmitting equipment to be mounted in the same room with elevator equipment. And, therefore, has petitioned the insurance board of Texas to not renew the insurance of buildings with this situation. So we will have to move the ATV repeater receiver equipment to a different location on the same building. This is both good and bad news. The good is that we are being treated as welcome guests on the building, and arrangements are being made for our move. The bad news is that we will probably have the repeater off or in some minimal configuration for a short while. We (the volunteer worker bees) will do our best. If you would like to volunteer to help, give a call on 146.70 during drive times and you will be drafted. The only requirements are willingness to work.

The next and very exciting news is that HATS, Inc. is now an IRS 501, a non-profit organization. And what does that mean? Basically, we do not have to pay any *TAXES*. Donations to HATS are *not tax deductible*! Although they will be graciously accepted. But we will not have to pay any more \$15.00 per month bank service charges. Some of the particulars come into action when we make more than \$25,000 per year. Or, if we have any paid employees (ha, ha, ha). I don't think we have anything to worry about.

I understand that the next Houston Ham Convention will be held in Humble, TX. If you are unfamiliar with Humble, it is located on the northeast side of Houston, on US-59, just north of Beltway 8. The date will be November 4-5, 1995.

As I get more information, I will pass it along.

If you haven't tried it lately, the 713-HOT-FMTV fax back server is working great. Over 35 faxes have been sent to interested persons.

We need a volunteer. Dan at EPO has said he would let us set up an ATV demo in the Ham section of the store, but we have not been able to get the time to set it up. If you do, please give Fred a call at 439-5397, he has the hardware.

We also need a volunteer to go to Johnson Space center and pick up the ATV equipment we loaned them. Our intention is to assemble the equipment into a repeater then install it at JSC or use it as a remote link to the W5PZP repeater. We will be selling the TX-RX ATV combine duplexers through this newsletter or ATVQ as soon as we get them. If you are interested, call Fred, N5JXO, at 713-439-5397, work.

The bank says we have \$656.02 in the account. This not a big number and with the repeater move coming up, we may dip close to our self-imposed \$400.00 minimum. If you would like to join, get an application form from HOT-FMT and send it in.

We will have HATS 421 MHz ATV antennas at the next meeting. We have 8/9 ready for sale. We will soon have antennas for 1.2 GHz of the same design.

HOUSTON AMATEUR TELEVISION SOCIETY, INC.

Greetings avid ATVers.

Once again, the plan is to have the February meeting carried on the ATV repeater for those who cannot get there. We will be monitoring 146.7 repeater for talkback.

This month we will be discussing operation of the repeater, how to use the control codes and what they do. We will have a demonstration of VCR companion software, and we will be looking for volunteers to make repeater movies. (Those videos you watch when there isn't anyone on the air, to check and improve your receiver.)

N5JXO will discuss the recent modification to the VS100 controller to allow us to control PTS (Push To Show) correctly and also buffer up to 3 remote control ports. This allows us to turn 3 devices on or off via the control frequency. Anyone have a ccd color camera they want to put atop a 33 story building?

We are working on changing the link from 1.2 AM to a 3 GHz FM link. This will allow us to add 1.2 GHz FM Receive and Transmit, and maybe 1.2 GHz AM transmit.

I repeat this with the misspellings corrected-HATS now has an e-mail remailing node. Any mail sent to HATS@stevens.com (via the internet) will be resent to all subscribed users. This is intended to be a "local" resource for current ATV information. To register send an e-mail message to listserv@stevens.com. In the body of the message say:

subscribe HATS FName LName

With FName=your first name and LName=last

We will have more Antenna Kits at the March meeting! We have sold over 15 of these kits. Reports are very good. One user WASTWT, Mike, has even transmitted on his with good results. Here is what we have. We are selling kits that are 11 element 421 MHz 75 ohm antennas. The antennas are intended to be used as dedicated receive antennas for any ATV repeater in Houston. The kit has all elements precut, and the boom precut and drilled. The cost is only \$15.00 and is such a deal. It will be difficult for you to assemble all the parts for this cost.

If you haven't renewed your membership to the Houston Amateur Television Society, we will still be happy to accept your \$25.00 check.

We are looking forward to replacing the Icom 25A on the repeater as a control link receiver, with a Hamtronics receiver that has already been ordered. This receiver has a helical front end and should be better suited for the job.

How are you getting your newsletter? It is distributed by e-mail and by FAX. These two modes are the absolute cheapest modes for HATS to use. If you would like to add yourself or a friend to one of these lists, send a message to me via one of the following methods:

FAX at 713-439-7210

e-mail at N5JXO@amsat.org or

fred_juch@hpatc2.desk.hp.com

You can be on both distributions if you wish. We also have a FAX list that does not have a cover page if you don't need one. (This saves about 3 minutes each.) We will be happy to add club lists or whoever is interested. The e-mail list is preferred since it takes less time to send.

W5PZP & HATS are currently operating an Amateur Television Repeater in Central Houston, atop a 33 story building near the SUMMIT. This repeater has the following capabilities: Output - 421.25 MHz AM TV Vertically polarized, 70 Watts with a gain antenna. Input - 2-1255.0 MHz FM TV Vertically polarized (no preamp) Diamond Tri-Band antenna. Control frequency is - 146.70 MHz, on Ringo Ranger (use the repeater). This repeater is operating under the call sign of W5PZP.

User Control Codes:

*11	Bring up the ID screen for 1 minute
*12	Put in repeat mode for 1 minute
*13	Put in scan mode for 1 minute
*14	440 MHz manual input for 20 minutes
*15	Cancel manual mode
#1	Scan start/increment
#2	Scan stop
#7	Clear all user modes
#9	Manual ID for a few seconds
9X	When in manual mode, select video X (0-9)
0X	When in manual mode, select audio X (1-4)

There are no other * or # codes. Those not listed are not implemented.

This repeater can alternatively scan each of three video inputs for a horizontal sync pulse from your TV signal, and then bring up the carrier and repeat your video and audio. After about nine minutes, the Video ID screen will blank out your signal and identify the repeater. When the ID is over the repeater will again scan for a video input and so on and so on.

Right now we do not have any other inputs, such as NASA Select or weather radar, but these are in the plans after the initial bugs are worked out. Your suggestions are needed if they are accompanied with a realistic plan of attack (don't say "someone else should build this", etc.) New members are always welcomed, Hams or just watchers. One of this club's goals is to help others get started. Please feel free to ask for assistance. Several members can be found on 146.70, 146.66, 145.47 Repeaters. Most of the active officers are on 146.70 repeater during drive times. Good luck and remember the key is now Push To Show, not Push To Talk!

Remember to check in to the informal ATVNet on Tuesday nights at 8:00-10:00. Voice 146.70 Repeater.

Be the first to put your club meeting on the HATS ATV Repeater. Meetings second Wednesday of each month @ 7:00 pm, 2000 West Loop South.

Note - With a lot of caveats: The 421.25 AM signal can be picked up by cable TVs and VCRs when they are set to CABLE channel 57 and connected to an outside gain antenna. The input is on cable channel 59.

When we get up a 1.2 GHz FM signal, you should be able to receive it with a LNB style Satellite receiver. These receivers demodulate ~900 MHz ~1.4 GHz FM signals to Video and Audio. The only problem is that they use a wider bandwidth signal that we can Transmit. This makes the picture look light but can be overcome with lots of power. Use a preamp!

Viva ATV!

FRANCE: A.N.T.A. A NEW ATV ASSOCIATION FOUNDED IN JANU- ARY 1995

An important ATV meeting took place in TOURS on November 26, 1994. Most of the om's and yl's made a long trip, coming from all parts of France (Dunkerque, Strasbourg, Toulon, Nimes, Bordeaux, Toulouse, etc). This assembly decided to found the "Association Nationale de Television Amateur" (A.N.T.A.). The official date of creation is January 16, 1995.

The objectives of the association are to regroup all amateur television enthusiasts and all other people interested by this activity and also to increase their technical abilities. The officers of this new association are: President - Michel, Amiard F6ANO, Vice President - Roland Cornuel F8MM, Secretary - Rene Volland F6BRV, Treasurer - Patrick Pochet F1IAKT, Technical Manager - Marc Chamley F3YX.

The association will send its journal B5+ to all members free of charge. The annual subscription was set at 100 FF for 1995.

The next general meeting will take place next fall where the A.N.T.A. will probably establish agreements with the REF-UNION (French IARU region 1 representative). Right now we are facing in Europe a Detailed Spectrum Investigation (D.S.I.) phase II of the European Radio Committee (E.R.C.).

Just a few comments regarding Dayton 95 and your mag. It was by luck that I wandered into your meeting in the Holiday Inn. I had hoped to see all you ATVers but since the magazine had not arrived before I left home, I was not sure. Your Vol 8, #1 arrived the next Wednesday after I returned home...I know you asked for comments regarding the speed of the mails, so here is my report.

I have an AD that I would like to include in your next issue. When I resubscribed in Dayton, I forgot to ask you about AD rates. So, just bill me for what it costs.

FOR SALE 450 MHz ATV tower mounted amp/preamp. AEA brand, model RLA 70. 50 Watts out with 0.5 Watts in. (Matches the AEA VSB 70 exciter.) Brand new, never hooked up. Cost \$700. Sell for \$400 plus shipping.

Thanks and keep up the good work.

John E. Greve, W9RI
3216-37th Avenue
Rock Island, IL 61201
309-786-8187 Voice
309-786-8047 FAX

GORDON WEST ADVANCED BOOK UPDATED

Amateur radio operators wishing to upgrade to Advanced class may now obtain the new updated July, 1995 to June, 1999, Advanced class FCC license preparation book, written by well-known instructor, Gordon West, WB6NOA. The new updated Advanced book covers all 582 Element 4A questions and answers, four possible answers, and West's unique explanation for every question.

"The first 20 pages are devoted to bringing the licensed radio amateur up to date on recent changes within the amateur radio service," explains West. "Chapter 3 specifically guides the radio amateur through testing procedures for the upgrade Advanced class exam," adds West. This book also tells examinees exactly what to bring to the VE test session. The book also contains tear-out pages of formulas, too.

The new updated Advanced class FCC license preparation book is available through all Radio Shack stores, with a new blue and green cover with a photo of author Gordon West on the front. This book is also available through leading amateur radio dealers, as well as a home-study book for all Gordon West Radio School students. The book carries a suggested retail list price of \$11.95, and is published by Master Publishing, Inc.

Editor Note: For a free review copy of this book, contact Master Publishing at 214-907-8938.

RADIO TELEGRAPH COURSES FROM GORDON WEST

Gordon West Radio School instructs both amateur radio courses as well as commercial radio curriculums. Gordon West now offers high-fidelity, long-play, code cassettes "commercial rated" to pass the commercial first class, second class, and third class radiotelegraph licenses, as well as any level of amateur radio examination.

Learning the code-radiotelegraph course #1, six cassettes.

CW speed-building, 5-16 wpm, radiotelegraph course #2, six cassettes.

CW speed-building, 10-27 wpm, radiotelegraph course #3, six cassettes.

Learning the International Morse Code accelerates code character recognition with 5 wpm word rates using 16 wpm - 20 wpm character rates. "Gordon" narrates the random runs, and also gives valuable tips on preparing for any type of code exam.

The CW speed-building 6 cassette course #2 is for anyone who knows the code, but plans to build code speed up to 16 wpm for either the commercial radiotelegraph random code group test, or an amateur radio General class code test.

The 6-tape radiotelegraph course #3 prepares applicants to pass the radiotelegraph second and first class exams, with plenty of room to spare for the amateur Extra class exam.

Each code course contains six long-play cassettes, narrated by Gordon West, and packaged in a sturdy plastic cassette holder. All instructions are voiced right on the tapes after each practice run, so there is no paperwork to lose.

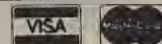
"The commercial radio operator' radiotelegraph license could fulfil the requirements of cruise ships and excursion boats needing trained operators," comments Gordon West. "These cassettes will actually over-prepare any commercial applicant who may wish to also take the amateur radio 5 wpm, 13 wpm, and 20 wpm code tests, too."

Each course is \$29.95, plus \$5.00 postage and handling, through Gordon West Radio School, 2414 College Drive, Costa Mesa, California 92626, as well as from leading amateur radio and commercial radio dealers.



P.C. ELECTRONICS 2522 PAXSON LANE ARCADIA CA 91007-8537 USA
TOM (W6ORG) & MARYANN (WB6YSS) O'HARA (818) 447-4565

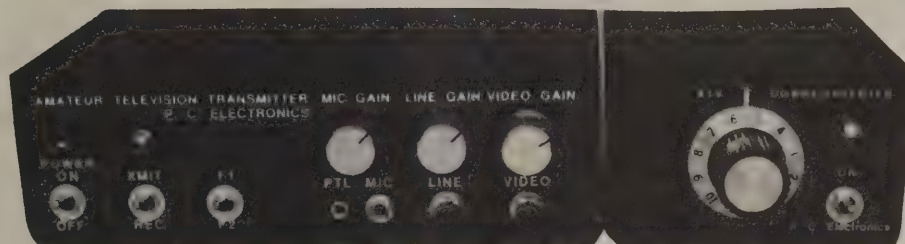
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THE ATV TWINS

THE LOW COST
PROGRESSIVE
ALTERNATIVE
TO A TRANSCEIVER

Made in U.S.A.



TX70-1b Transmitter only **\$279** delivered UPS TVC-4G Downconverter **\$89**

Not Sure what ATV is all about and your hobby budget's tight? Start with the tried and true TVC-4G Downconverter to see the action for just \$89. Then later, when you want to transmit, just add the TX70-1b companion Transmitter at only \$279.

TX70-1b SPECIAL FEATURES:

- * Two frequency 1.5 W p.e.p. transmitter properly matches linear amps with adjustable internal sync stretcher & blanking level on the time proven KPA5 transmitter board
- * Built-in RF T/R relay board switches antenna and applied 13.8 Vdc between transmitter and your external ATV downconverter
- * Full 25 kHz dev. broadcast standard 4.5 MHz sound subcarrier with independent mic and line audio controls allow voice over commenting while showing home video tapes. Accepts low impedance dynamic mics with "Push to Look" switch.
- * Transmit RF detected composite video outputs to monitor phono jack on back to see what you are transmitting. In receive you see your own direct camera video at this jack to enable focus and lighting set-up before flipping the switch into transmit.
- * RCA phono jack camcorder or VCR composite 75 Ohm video and line audio inputs, type N 50 Ohm antenna input, and 50 Ohm BNC output to downconverter connectors
- * Small rugged shielded cabinet - 7.3 x 4.7 x 2.1", 1lb. 11 oz.

Just plug in your camera, VCR, camcorder, etc. composite video and audio, 70cm antenna, 12 to 14 Vdc @ .5A, and you are ready to transmit live action color or black and white pictures and sound to other amateurs. Specify 439.25, 434.0, 427.25 or 426.25 MHz transmit frequency. 1 crystal included, second crystal add \$15.

*Transmitting equipment sold only to licensed Tech class or higher radio amateurs verified in the Callbook for legal purposes. If newly licensed or upgraded, mail or fax copy of license.

WHAT ELSE DOES IT TAKE TO GET ON ATV?

Any code free Tech class or higher amateur can get on 70cm ATV with full color and sound. Any video camera, camcorder, VCR or computer with a composite video output can be plugged into the front panel phono jacks for both audio and video transmission.

Start by selecting a 70cm antenna and connecting a TVC-4G downconverter to your TV set to receive. Add the Transmitter along with your camcorder and 13.8 Vdc from a regulated power supply capable of .5 Amps and you are on the air. It's easy!

DX with TX70-1b's and FO22-ATV antennas line of sight and snow free is over 22 miles, 7 miles with the 440-6X normally used for portable uses like parades, races, search & rescue, damage assessment, etc. For greater DX or punching thru obstacles add either of the ATV compatible 15, 50 or 70 watt amps listed below.

The TX70-1b has full bandwidth for color, sound and live action just like broadcast. You can show the shack, home video tapes, computer programs, repeat SSTV, weather radar, or even Space Shuttle video if you have a home satellite receiver. See ARRL Handbook chapters 20 & 7 for more info and Repeater Directory for local ATV repeaters.

BUY BOTH AND SAVE \$19

If you order both the TX70-1b and the TVC-4G at the same time, the special package price is \$349

Most telephone orders shipped within 24 Hours

COMPLETE 70CM ATV STATION



Your TV set

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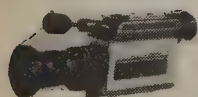


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D26N

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Your video camera
or camcorder

+

TX70-1b-\$279 & TVC-4G-\$89
+ ATV Xmit & Rec
1.5 Watts p.e.p. 13.8 Vdc
Power Supply
required

Optional matching Amplifiers

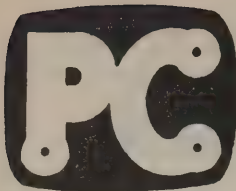
Mirage D15N 15 Watts RF out.....\$176
Mirage D26N 50 Watts RF out.....\$249
Mirage D100ATVN 70 Watts out.....\$359

Antennas see page 5

KLM 440-16X 14dBd\$139
KLM 440-10X 11 dBd\$77
KLM 440-6X 8.9 dBd\$60
RUTLAND FO22-ATV 15.8 dBd \$119

Remember when comparing prices, ours include UPS surface shipping. 10/94

2509+ Mile DX set with our gear, KH6HME to WB6NOA & KC6CCC - - - Can you beat it?
HAMS, call (818) 447-4565 now for your complete 10 page catalogue of our ATV products!



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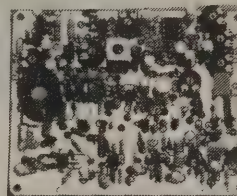
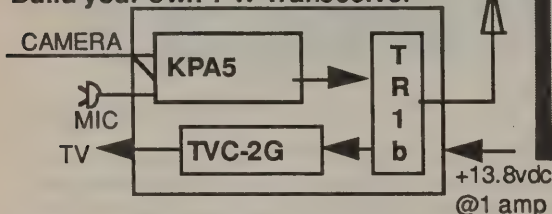


ELECTRONICS

THE "KREEPIE PEEPIE" ATV TRANSMITTER

THIS IS THE ATV TRANSMITTER BOARD YOU HAVE READ ABOUT THAT HAS SURVIVED MANY BALLOON FLIGHTS TO OVER 100,000 FEET AND BACK. ALSO USED FOR R/C MODELS WHERE AN ALL IN ONE BOARD WITH SOUND IS DESIRED OR FOR DEDICATED LINKS AND REPEATERS. JUST THE THING FOR THE BUILDER WHO WANTS TO PACKAGE AND MAKE HIS OWN PORTABLE 70 CM ATV TRANSMITTER OR HOME TRANSCEIVER WITH A WIRED AND TESTED BOARD.

Build your own 1 W Transceiver



3.25 x 4"

KPA5-F board only \$169



KPA5-F 70CM ATV XMTR BOARD FEATURES:

- 1.5 Watts P.E.P. typical RF output. Run barefoot for portable, but if needed for greater DX, the output properly matches the Mirage D15N 15 watt, D26N-ATV 50 Watt linear amp for full output or D100TVN to over 70 Watts with its adjustable sync stretcher. Same board as used in TX70-1b.
- FULL COLOR AND SOUND on a small 3.25 x 4" board
- Wired and tested board runs on external 13.8 Vdc @ 300 mA. supply or 12 V battery. Weighs only 3 oz.
- Accepts composite video from cameras, camcorders, VCRs, computers, etc. 2 audio inputs, one for low Z dynamic mic, & one line level from most cameras & VCRs. Transmit monitor output enables seeing your own true RF detected video.

KPA5 APPLICATION:

PORTABLE CORDLESS TV CAMERA. Think of it as a video HT. Place the KPA5 in one of the L.M.B. Diecast aluminum boxes, Diamond RH77CA half wave on top or at the end of 50Ω coax attached to a headset. Plug into a 12 to 13.8V source such as a 12 Vdc battery pack. Depending on terrain & receiving antenna DX is typically over 1 mile. Then at home with KLM 440-16X antennas at both ends DX is >22 miles snow-free line-of-sight.

Price only \$169 supplied with one crystal on 426.25, 434.0, 427.25 or 439.25. 2nd xtal add \$20. Has 2 relay switched crystal sockets. Specify frequency(s) when ordering, check with local ATVers, ARRL Repeater Directory or call us. Sold only to code free Technician class or higher licensed radio amateurs.

ACCESSORIES:

L.M.B. CAB247 7.3x4.7x2" roomy aluminum box.....\$22
CAB234 4.6x3.6x2" aluminum box, smaller tighter fit.....\$14
100 Ohm carbon panel pot for video gain control.....\$5
TR-1b RF T/R relay module, mounts on chassis N conn.....\$29
TVC-4G..\$89 or TVC-2G..\$49 Downconverter (pg 5)
RG174 50 Ohm 1/10 inch dia. coax cable, 6ft.....\$3
MIRAGE D15N-ATV 1.5 in / 15 out all mode amp.....\$176
MIRAGE D26N-ATV 1.5 in / 50 out all mode amp.....\$249
MIRAGE D100TVN 1.5 in/70 out all mode amp.....\$359

DIAMOND RH77CA 2m/70cm omni antenna, BNC, 15"....\$30
DIAMOND RH951 2m/70/23cm omni antenna, BNC, 15"....\$52
450 ISPOLE omni 4 dBd vert. gain antenna, N.....\$89
KLM 440-6X 8.9 dBd ant., 28" boom, >50 deg. BW.....\$60
KLM 440-10X 11.2 dBd, antenna, 64" boom.....\$77
KLM 440-16X 14.2 dBd antenna, 10.5 ft boom...\$139
UG21 type N male connector for Belden 9913 coax.....\$5
UG58 N female flange type chassis connector.....\$2
1000 pF Feed-thru Cap for R/C or repeater builders....\$4

SMALL TXA5-RC 1 WATT ATV TRANSMITTER.....\$129

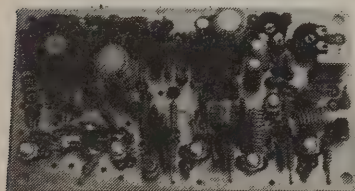
Designed primarily for Radio Control models, rockets, balloons, etc. with it's small 2.25 x 4 inch size and 2 oz. weight. Adjustable power output from 1.5 p.e.p. to 100 mW. Draws 350 MA @ 13.8 Vdc at 1 Watt, 200 ma at 100 mW. Has adjustable sync stretcher and provisions for sound from the FMA5-F board (pg 2) in case your application needs higher power sometimes or subcarrier sound. Comes wired and tested ready for you to mount in a shielded enclosure, connect up coax from antenna and camera and wires to power source. Plan on shielding your R/C receiver and adding the simple antenna low pass filter supplied with the application note. Receive with one of our 70 cm downconverters listed on page 5 and a TV set. Specify freq., 426.25 MHz suggested for R/C, other standard ATV freq. avail.

TXA5-70a board can also be used for R/C applications where 2 frequency capability is desired. Same size as TXA5-RC but 80 mw.for .25 to 5 mile DX, or add 10 Watt PA5 amp for 3 to over 100 mile line of sight DX. See page 2....\$89

MICROTEK ATVM-70 MINI ATV transmitter board.....\$209

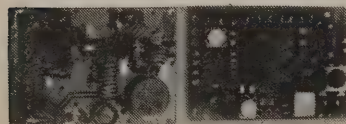
Only 1.0 x 1.3 inch, wired and tested board. See article in July 91 73 Magazine page 9. Nominal output 80 mw. Capable of driving the PA5 for higher power. Requires 7.0 to 10.0 Vdc maximum at <100 ma. Only 434.0 MHz is available with the SAW oscillator. Also Great for R/C models, robots, demos or short links. Snow free line of sight DX 1/4 mile dipole to dipole or up to 5 miles with KLM 440-16X beam antennas.

MSC-2 companion 4.5 MHz sound subcarrier board, same board size as ATVM70.....\$59



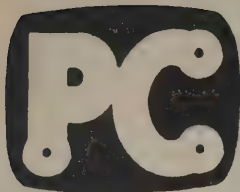
TXA5-RC 2.25 x 4"

See page 8 for mini cameras



ATVM-70 Transmitter MSC-2 Sound

HAMS, call (818) 447-4565 for your complete 10 page catalog of our ATV products!
We have everything you need to get on the 400, 900 and 1200 MHz bands. 4/95



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TOM (W6ORG) & MARYANN (WB6YSS) O'HARA

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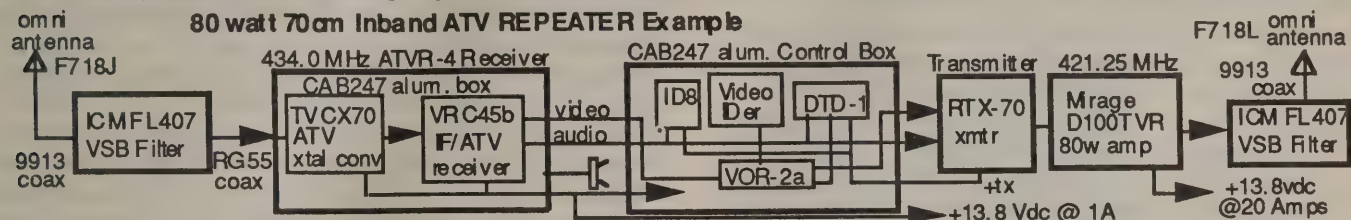
24 hr FAX order line (818) 447-0489



ELECTRONICS

READY FOR AN ATV REPEATER OR LINK IN YOUR AREA?

WE HAVE THE MODULES AND SOURCES FOR INBAND OR CROSSBAND



Select an RTX Transmitter and a ATV Receiver for the bands you want, add the appropriate linear amp, VSB filters & antennas, ID & VOR-2a, power supply and coax for your own repeater. We suggest low in / high out for crossband. Ask for a copy of our 8 page ATV Repeater App Note including recommended sources of filters, antennas, video IDers, etc. before you start so you can do it right the first time. Most can put together a good working ATV repeater for under \$2000.



TRANSMITTERS ready to go in a 7.3x4.7x2 die cast aluminum box for tight RF shielding. >1 Watt p.e.p. output for proper drive to companion amplifiers. Adjustable sync stretcher to enable set up of the right video to sync ratio after an amplifier is added. Independent mic and line audio inputs. Requires 13.8 Vdc at 500 ma.

RTX-70 specify output frequency, 421.25 MHz most popular rpt. output\$279

MIRAGE D100ATV-R 90 Watts p.e.p on ATV continuous duty 70cm repeater amplifier see page 2 for more info and picture\$539

RTX-33 specify frequency - 923.25 MHz most used frequency\$329

RTX-23 specify frequency - 1253.25 MHz best rpt. output frequency.....\$329

We suggest Downeast Microwave for 900 MHz (3318PA) and 1200 MHz (2318PAM or 2335PAM) repeater amps to match our transmitters. Call them at (908) 966-3584.



RECEIVERS ready to go in a 7.3x4.7x2 die cast aluminum box for tight RF shielding.

Contains a TVCX crystal downconverter and VRC-45b receiver. Two composite video outputs, squelched speaker and line audio outputs. Requires 13.8 Vdc at 300 ma.

ATVR-4 specify frequency - 439.25 or 434.0 most popular for inband or crossband repeater input\$319

ATVR-9 specify frequency - 910.25 most popular repeater input.....\$329

ATVR-12 specify frequency - 1253.25 link, 1277.25 repeater input.....\$349

VOR-2a Video Operated Relay board...\$45, keys RTX upon detection of horizontal sync plus 10 min. & end of transmission momentary relay for switching to video ID to meet FCC regs. Pots for sensitivity, hang & ID time. 1.75x3.5".

ID-8 Automatic Morse Audio Identifier...\$89, Communications Specialists board has 8 programmable and selectable messages up to 200 characters, CW 1-99 WPM, ID time 1-99 minutes, and more features in Non-volatile EEPROM memory. Includes programming key pad. Output up to 4 V p-p. Size 1.85x1.12x.35. Req. 6 to 20 Vdc @ 6 ma.

DTD-1 DTMF Decoder...\$59, Communications Specialists board decodes up to 4 programable digits for latched or momentary relay driver output. Use for remote repeater on/off, video switching, etc. Size 2.0x1.25". +7 to 16 Vdc.

LMB CAB 247 7.3x4.7x2 die cast aluminum box. Great for control housing VOR-2a, DTMF and ID boards...\$22

ANTENNAS When comparing prices remember ours include delivery by UPS surface in the contiguous USA.

70cm F718 (L,J,A - specify video carrier frequency) Diamond vertical omni 9.3 dBd gain, 15 ft long.....\$238
Recommended vertical omni for dual antenna inband 70cm or crossband repeater applications.

440-6X KLM 8.9 dBd gain 420-450 MHz 6 element beam. 28" boom, end mounted.....\$60

COY4347EL Swiech 10 dBd 420-450 MHz 7 element beam. 4 ft boom, end mounted.....\$60

440-10X KLM 11.2 dBd gain 420-450 MHz 10 element beam 64" boom, end mounted.....\$77

440-16X KLM 14.2 dBd gain 420-450 MHz 16 element beam 10.5 ft boom, center mounted.....\$139

33cm FP-19 Comet vertical omni 10 dBd gain, 7 ft 4 in long. Covers 902-928 MHz.....\$119

3318LYARM Directive Systems 14.2 dBd gain 902-928 MHz beam. 6 ft boom, end mounted.....\$95

23cm F1230 Diamond 1200 MHz band vertical omni 11.3 dBd gain, 10.5 ft long\$163

2424LYRM Directive Systems 16.2 dBd gain 1240-1300 MHz beam. 6 ft boom, end mounted.....\$95

DOWNCONVERTER DISCOUNT of 10% is available to Repeater groups and clubs if you order 5 or more per item of the tuneable downconverters on pages 4 or 5. Special discount for Teacher Hams who will use ATV in classroom. The order must be sold and shipped to one person at one time. It helps to have some extras available for new people to try out your repeater or use at demos at other clubs and schools. Higher quantity discounts on our mfr. gear: 5-24 =10%, 25-49=15%, 50-99=20%, 100 up=25%. Remember when comparing prices, ours include UPS surface shipping in cont. USA. 4/95

Hams, call (818) 447-4565 for your 10 page catalog & repeater application note! 4/95

MEMFEST '95

P.O. Box 751841
Memphis, TN 38175-1841

We are happy to announce MemFest '95, the Memphis Amateur Radio and Computer Show is again scheduled on the second Saturday and Sunday of October - October 14 and 15.

The Show Place Arena, where we held our 1994 Show, offers us many features such as large all-indoor facilities, free parking, 770 RV hookups on premises and plenty of room for our future expansion.

Our attendance has grown every year for the past several years and we expect an even larger increase this year. In an effort to continue this growth, we extended an invitation, which has been accepted by Gordon West, WB6NOA, to lead a special one hour seminar on Saturday on the subject "Long Wire Antenna Tuners". Also, Gordon will be our guest speaker at the Saturday Night Banquet, and his subject will be "Wacky Radio Recordings."

This year we plan to mail approximately 14,000 flyers. The flyers, for those hams who attended the 1994 MemFest, will include a \$25 special drawing ticket which may be redeemed by purchases at our exhibitor booths. These special drawings will be conducted during MemFest, and we will redeem such tickets from the exhibitors. Next year we want to attempt a similar redemption prize for our flea market vendors.

We plan to continue the hourly HT drawing and anticipate additional worthwhile prizes. We have found that this holds the crowds in attendance throughout the weekend. We appreciate the vendors offering prizes for MemFest '94 and would be pleased to continue this procedure.

I will be your contact person this year. Please join us at our Amateur Radio and Computer Show in Memphis, and be a part of the continued growth we have experienced. All vendors who attended the MemFest '94 may obtain the same location for the MemFest '95 if reservations are received by me no later than July 31, 1995. After this date, reservations are made on a first come, first serve basis.

Sincerely,

Mary Moore, AC4GF
Chairman

W4BAL & K4GCC COVER JULY 4TH COCOA PARADE BY ATV

LISATS supported the Cocoa Chamber of Commerce Fourth of July Parade with ATV. Parade officials were able to see parade marshalling and progress. Especially interested in whether the parade would cross itself, LISATS helped the officials by placing a camera at Poinsett and Florida Avenues. Video transmitted by mobiles W4BAL, from Comm1, and K4GCC, were sent to K4RBD's van at the judge's stand. WTPB assisted K4GCC, and W4PRK assisted W4BAL, who had two cameras in operation. The operation was conducted on 434 MHz simplex with excellent video and audio.

JUNE CAATN QUARTERLY ATV SEMINAR

Mike Dees, N3EZD

The Central Atlantic Amateur Television Network (CAATN) held its quarterly seminar on June 10, 1995, at the Laurel Inn near Philadelphia, PA. Attendance was again excellent with many new faces from the Philadelphia area.

This seminar session was sponsored by the Philadelphia group with Ron, K3KZO, serving as the program chairman.

The program had several very interesting topics including a presentation by George, WR3B, on TPARC's coordination process, the progress on liking the York and Baltimore ATV repeaters by Bob, WB3EAF, and myself, a demonstration of the N3HPX repeater, and a discussion of the use of MMICs by Russ, N3HPX. The highlight of the program was a description and video tape presentation by Frank, K2KVT, of the 440 MHz single-antenna inband ATV repeater he built and operates and the difficulties and problems he had to overcome. The repeater operates at approximately 100 watts with no sign of interference to the input. The material presented by Frank was of great value to all the ATV repeater operators. Frank also described several pieces of commercial CATV equipment that he incorporated into his repeater that are far superior to the available amateur ATV equipment.

The next CAATN seminar will be held in York, PA, on September 23, 1995, during the York Hamfest weekend. Write to Paul Seman, W3CSU, 111 Davidson Drive, Stevensville, MD 21666, for more information.

THROUGH THE LENS....

LISATS continues to hone its operational ability. The 1200 MHz camera link works great! A 24 element loop yagi is pointed at the cameraman's location and the 1/4 wave vertical on the transmitter. The 434 MHz transmitter output does not bother the club's 1200 MHz receiver which feeds its video to the 434 transmitter. The loop yagi, on a PVC mast, is quickly inserted into a tube on the van's tire carrier, for rotation as required. We are, literally, ready to roll to any site within 10 watt transmitter/10 db 20 ft masted yagi ATV range of the K4ATV repeater.

My personal health situation took a dramatic turn for the better last week when the specialists at Shands Hospital in Gainesville declared me now free of any bladder cancer. I appreciate the support during the ups and downs of diagnosis and prognosis. It was thought the bladder's overall appearance was deteriorating. It turned out the appearance was the result of BCG therapy in January, and was not a prognosis of trouble ahead.

Hope you like the treatment that WB8ELK gave LISATS in the July 73 Magazine. We are already getting letters of interest and envy.

We are refurbishing my ATV World transceiver for installation in Comm1, to giving Comm1 a stronger output.

We are prepping a club property list including present custodian and locale of each item.

More later...

LISAT PREPS MOBILE ATV SHOW FOR AUGUST IRARC!!

Live remote pickup is planned, using LISATS ATV mobiles, for an ATV show to the IRARC August meeting. From a planned Cocoa Beach location, ATV mobiles by K4RBD and K4GCC will send pictures via the K4ATV repeater to W4BAL's Comm1 at the meeting. W4BAL will feed TV sets inside. Demonstrating the range and mobility of ATV, the pair will feature on-camera descriptions of the mobile systems including antennas, masts, cameras and transceivers.

K4RBD's operation will feature a camera linked to his van by a 1200 MHz system. APC Electronics 1200 MHz transmitter is mounted on his Panasonic camcorder, powered by a 12 volt gel cell in a belt pack. Signal is received the club's 1200 MHz receiver in the van and its video/audio output is inputted to his 434 MHz transmitter.

FOX HUNTING TIPS Alan Laslie, WA4KDO

From Lincoln Trails ARC newsletter

At the suggestion of Bill, W4BEJ, I've put together a few suggestions to coordinate everyone's efforts at our next Hidden Transmitter Hunt:

Boundaries

ETOWN North of US 62 (Mulberry Street)
South of KY 3005 (Ring Road)
RADCLIFF West of US 31W (Dixie Highway)
South and East of Hill Street
North and East of KY 313 (Vine Grove Conn.)

Site Selection

The FOX must remain on public access property. This can include private property only when the public is welcome to be there, such as a shopping center parking lot. This would not include your Uncle Buck's farm. As a rule of thumb, don't select a site that another Ham would be nervous about approaching. This is a FOX HUNT, not a police stake out.

Fox-Hunt Operation

During the Club meeting:

- The FOX station is selected during the Club meeting
- The FOX announces what simplex frequency he'll use
- The HUNTERS identify themselves to the FOX so that the FOX will know how many stations will be looking for him. This is important so that the FOX will remain in place until everyone has had a chance to find him.

After the Club meeting:

- The FOX announces his departure from the parking lot on the simplex frequency
- FIVE MINUTES LATER the HUNTERS may leave the meeting site parking lot and prepare for the hunt
- FIVE MINUTES LATER (ten minutes after he left the meeting site)

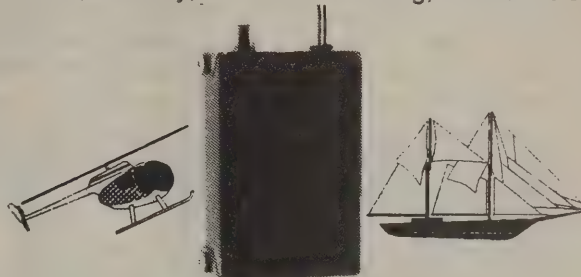
Micro-Video Camera SMALL SIZE 2"x3"x1"

Feather Weight 4 oz.

NTSC Output 240 TV Lines

Low Light 2 Lux 7-15 VDC/<100ma.

Typical Applications: ATV, Robotics, Computer Vision, Security, Remote Monitoring, Phone Vision



Factory New \$229.95

Add \$5.00 S/H Ca. add 6.75%

Micro Video Products

1334 So. Shawnee Dr. • Santa Ana, CA 92704

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the FOX makes his first transmission from his "hidden" position. He may not change locations until the hunt is over.

During the HUNT:

- The FOX may not change his transmitter power output or his antenna
- The FOX does not have to transmit "in the blind", but should respond to stations calling him
- The FOX (and all other stations) should regularly provide station identification per FCC rules
- The FOX should announce each time a HUNTER finds him but does not have to reveal any HUNTER'S identity
- The FOX-HUNT will end exactly ONE HOUR and TEN MINUTES after the FOX left the Club Meeting Site Parking Lot, or after all the HUNTERS have found the FOX, or after the FOX has heard from all the HUNTERS so that he knows that no one is still looking for him, WHICHEVER COMES FIRST! The FOX will announce that the HUNT is over, then as a courtesy, may move to the local repeater (146.98 if in Elizabethtown or 146.925 if in Radcliff) and again announce that the HUNT is over and remain on frequency a few minutes in case someone would like to discuss the hunt with him.

GOOD LUCK! Be safe and have fun!

NORTH TEXAS SYNC SOCIETY

Dear Sir:

First, a bit of information. The North Texas Synchronization Club (NTSC) is alive and well, and is sporting a new call. Andy, WY5V, has retired his ATV activities, temporarily we hope. Something about a new harmonic running things at his QTH. The NTSC ATV Repeater is now under the call sign of KC5NQ. President and Trustee is Billy McDonald, KC5NQ; Secretary and Technical Advisor is John Holmes, WA5WXA; Treasurer and Technical Advisor is David McNeil, KI5VM. The location has also changed. Previously, the repeater was at the 1270 foot level of a television tower in Cedar Hill, Texas. It is now located at the 800 foot level of a building in downtown Dallas, Texas.

Between the time the repeater was removed from Cedar Hill, and installed in Dallas, it was totally rebuilt. The visual transmitter is now a Harris low-power television exciter on 421.25 MHz, driving a 100 Watt Mirage D1010, into a 421.25 MHz circulator and a 7-pole ICM interdigital filter which is connected through 7/8 inch Heliax to a Linsay four-bay Zig-Zag. The aural transmitter is a modified RCA 700 feeding a three cavity band pass filter to a four-bay Zig-Zag on 425.75 MHz. The receiver is an H.F. Technology RX930 on 915 MHz and an IF70, with an 18 dB gain preamp connected to a 7-pole Spectrum Int'l. 915 MHz interdigital filter at the four-bay 900 MHz Zig-Zag. Both the input and output are horizontally polarized. A 1.2 GHz input will be added when funds and time are more readily available.

At the present there is an Amiga 500 generating an hour's worth of graphics that is continually cycled. An ELK I.D. board is used as back-up ID generator. The final repeater controller is still under construction/test, and will have available 8 video inputs, 8 audio inputs, and will drive four A/V outputs. The controller will also provide full audio conferencing, i.e. all inputs to any or all outputs. Intercom inputs are 144.340 MHz, 445.350 MHz, and 1284.340 MHz. At present, all intercom inputs are summed through an audio mixing panel into the repeater and transmitter, which makes for interesting conversations at times.

The NTSC ATV Repeater is open to anyone with a 915 MHz FM ATV transmitter. The intercom frequencies can be used to talk to whomever is using the repeater. The repeater is generally monitored almost all day long, and up to the wee hours of the morning, so, if you are in the Dallas area, and can receive the repeater, give a call, there's more than likely someone around. The repeater can be seen mobile with a P4 picture, in Allen, Texas, approximately 25 miles away. If you are in the area on a Wednesday, tune in at 2100 Hours for the ATV Net.

The NTSC ATV repeater signal quality has been scrutinized quite a bit. The local Field Office was impressed. And depending on the input video signal characteristics, the output video resolution of the repeater is very close to 400 lines. The phase delta, input to output, is within 5 degrees. Not bad for an "amateur" effort.

Second, I would like to add a correction to the response to the Video ID question, The W6ORGy Notes, ATVQ, Spring 1995, page 26:

1) 47 CFR 97.119 (b)(4) states "By an image emission conforming to the

applicable transmission standards, either color or monochrome, of §73.682 (a)....". This should correctly answer the video ID question as to how to identify an ATV transmission, along with the "some part other than Part 97" question. 47 CFR 73.682(a) consists of 3 1/2 pages of requirements that pertain to video signals and television transmissions. Also referenced in this section is §73.699, TV engineering charts, that graphically depict the parameters for visual and aural television transmitters, which are applicable to ATV operations.

2) §97.119(a) states in the first line that "Each amateur station....must transmit its assigned call sign on its transmitting channel....". This, I believe, means that each transmitter must identify. If one has the aural sub-carrier transmitted with the visual carrier, there then is only one transmitting channel. But, if a separate aural transmitter is being used, both the visual and the aural transmitters must identify since there are two channels in use.

47 CFR 73.682(a) is quite interesting. It states the actual parameters of the video signal. Fortunately for ATVers, these signal parameters are very close to the RS0170 specifications which most manufacturers meet for their VCRs, camcorders, and other consumer video related items. The only difference I have found is a few dB here and there, usually better than §73.682(a) requires.

Shown in §73.699 are charts that graphically show the detected video signals, their respective characteristics, and visual and aural transmission characteristics. To be noticed, all of the video waveforms are shown in the detected state, i.e. they are "upside-down" to what one sees on an oscilloscope if you are looking at the output of your camera. In Figures 5 and 5(a) are the spectral parameters for AM transmissions, with Figures 6 and 7 showing synchronizing waveforms for color and monochrome baseband video signals, respectively. This section of 47 CFR 73 is very useful for reference in alignment of an ATV system, and verification of signal parameters being re-transmitted.

One item that might be of interest to the ATV community is §73.682(a)(14) which states "it shall be standard to employ horizontal polarization." I am quite relieved to see that it says "standard" instead of "normal". We all know that ATVers ain't "normal". But, that section does bring up a few questions: 1) Are vertically polarized signals non-conformal for an ATV repeater? 2) If ATV can use "non-standard" polarization, does that mean §73.682 does not apply to ATV? 3) If §73.682 does not apply, what standards do apply? I don't believe that the FCC is too concerned with what kind of polarization is used in ATV systems, unless interference is being created, but it is an interesting point.

There is an area that I am interested in, and would like to correspond with others that may also be interested. That area is adding digital data to the scan lines in the Vertical Blanking Interval, lines 10-18 and 20, per §73.682(a)(23). Data rates to 64 Kb are presently in use in the commercial television service on these scan lines. I believe that this mode could greatly enhance the service that ATV can provide and would open up an avenue for intra- and inter-repeater control, data/voice channels, bulletins available on a continuous basis, and local area weather alerts. Decoded and displayed information could be available at EOCs over a wide area almost instantaneously without having to take the time for the information to be passed over voice nets. Protocol, data formatting, and routing headers, among other subject areas, are the first items I would like to get a round table going on. Please contact me, John Holmes, at 725 Laguna Drive, Garland, Texas 75043, if you are interested.

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THE ATV5 400MHZ ATV TRANSMITTER FEATURES !

- O UP TO 4 DIODE SW FREQUENCIES
- O USE WITH 12 TO 14 VDC
- O 300 VOLT/μSEC VIDEO
- O ADJUSTABLE SYNC STRETCHER
- O POWER MODULE ON THE BOARD
- O SMALL SIZE 3.25" X 4.00"

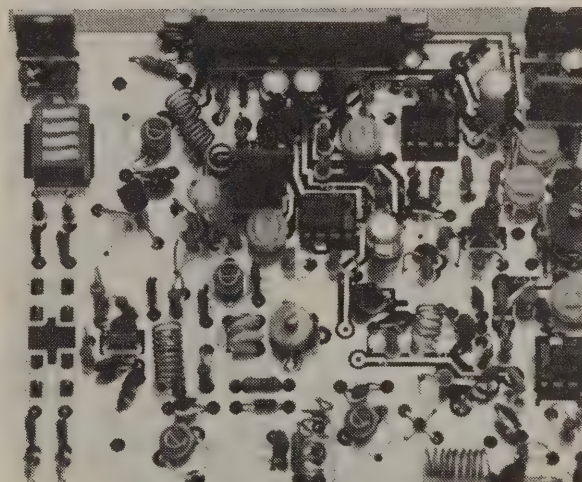
- O ONLY 5 TUNING CAPS FOR 400 MHZ
- O INCLUDES AUDIO SUBCARRIER GENERATOR
- O SOUND PHASE LOCK AVAILABLE (ATVPLL4.5)
- O 10 WATTS PEP
- O TEMPERATURE COMPENSATED 4.5 MHZ
- O DRIVES 50W M67728 BRICK

EASY TO USE. JUST MOUNT IN A BOX. CONNECT AN ANTENNA, +12 TO +13.8 VDC, CAMCORDER CABLE VIDEO AND AUDIO, AND YOUR ON TV WITH PICTURE AND SOUND. IN MOST CASES YOU WON'T NEED TO BUY AN AMPLIFIER LIKE YOU DO FOR THE 1 WATTER'S SINCE THE AMPLIFIER IS ALREADY ON THE BOARD SO YOU CAN SAVE HUNDREDS OF DOLLARS.

THE ATV900/1200 900 OR 1200 MHZ FM EXCITER

- O TWO CRYSTAL DIODE SWITCHABLE FREQUENCIES - ONE FREQ YOUR CHOICE SUPPLIED
- O SAME MODULATOR FEATURES AS ATV5 ABOVE EXCEPT FM MODULATION
- O YOUR CHOICE OF OUTPUT POWER OF 10 mW OR 50mW
- O INCLUDES SOUND SUBCARRIER CIRCUIT SET TO 5.5MHZ OR YOU SPECIFY

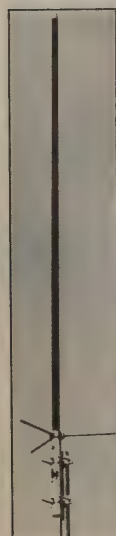
ATV900 \$159.00
ATV1200 \$169.00
ATV5 \$199.00
ATVPLL4.5 \$49.00



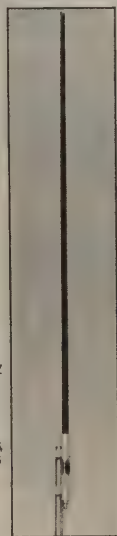
CALLS ACCEPTED AFTER 6PM PHOENIX TIME. SPECIFY FREQ'S 426.25, 427.25, 434.00, AND 439.25. ONE FREQ INCLUDED. EXTRA FREQ/S \$16.00 EACH. INCLUDE \$5.50 FOR SHIPPING AND HANDLING. AZ RESIDENTS ADD 6.7% SALES TAX. CHECK OR MONEY ORDER.

COMET

ANTENNAS FOR THE PROFESSIONAL AMATEUR



CA-1243Z
Dual Band
440-450MHz
1250-1300MHz
Base/Repeater Antenna
5/8 Wave x 4 446MHz
5/8 Wave x 9 1200MHz
Gain: 446 9.4dB
1200 12.8dB
Impedance: 50 ohms
VSWR: 1.5:1 or less
Max. Power: 446 150 watts
1200 50 watts
Length: 7' 5"
Weight: 2 lbs. 8 ozs.
Connector: N-type
Construction: Heavy Duty Fiberglass



CA-1221S
Mono Band
1260-1300MHz
Base/Repeater Antenna
1/2 Wave 21 Step Collinear
Gain: 15.5dB
Impedance: 50 ohms
VSWR: 1.5:1 or less
Max. Power: 100 watts
Length: 8' 6"
Weight: 2 lbs. 3 ozs.
Mounting Mast Diameter: 1 1/4-2 1/2 inches
Connector: N-type



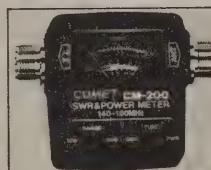
CYA-1216E
16 Element Yagi Beam
1260-1300MHz
Gain: 16.6dBi
VSWR: 1.5:1 or less
Impedance: 50 ohms
Max. Power: 100 watts
Polarization: Vertical or Horizontal
Length: 4' 5"
Weight: 7 lbs. 11 ozs.
Mounting Mast Diameter: 1"-2 1/4"
Connector: N-type
Construction: All Aluminum



PYA-913
Base 13 Element Yagi
904-920 MHz
Gain: 15.8dBi F/B ratio over 20dB
Max. Power: 150 watts
VSWR: 1.5:1 or less
Length: 4' 8"
Connector: N-type
Construction: Aluminum



FP-19
Base/Repeater
905-925MHz
Gain: 16dBi
Impedance: 50 ohms
VSWR: 1.2:1 or less
Max. Power: 100 watts
Length: 7' 4"
Connector: N-type
Construction: Heavy Duty Fiberglass

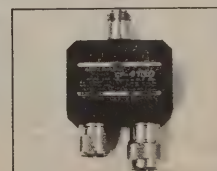


MINI SWR Power Meters

	Max. Power	Insertion Loss
CM-200	140-150MHz 45 watts	0.1dB
CM-300	200-240MHz 60 watts	0.2dB
CM-400	420-460MHz 50 watts	0.2dB
CM-420	140-460MHz 50 watts	0.1-0.2dB
CM-900	840-950MHz 60 watts	0.2dB
CM-1200	1225-1325MHz 60 watts	0.25dB

Measurements: 2.25" w x 2.25" h x 1.1" d
Weight: 5.25 oz.
CM-200, 300 and 400 have SO 239 Connectors
CM-420, 900 & 1200 have N Connectors

CF-4130 446/1200MHz
dB Loss: 1.3-460MHz 0.2dB
900-1400MHz 0.3dB
Band Rejection: 55dB Down
Max. Power: 146MHz 800W PEP
446MHz 500W PEP
1200MHz 200W PEP
Connectors: N-type



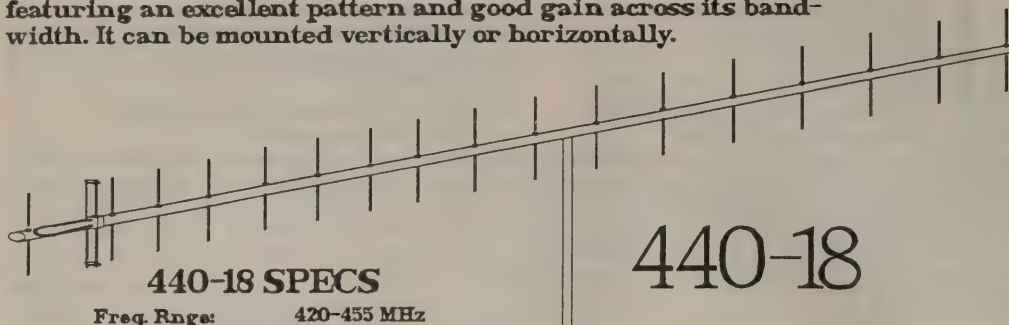
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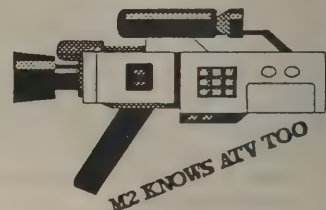
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440-18



ATV

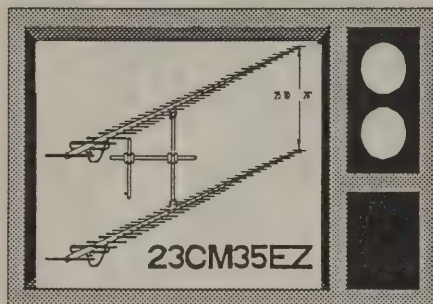
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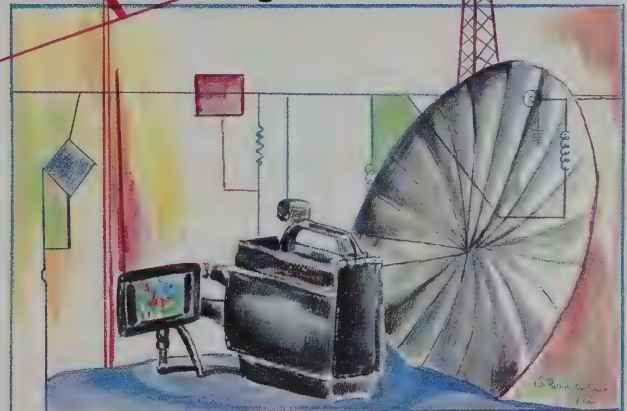
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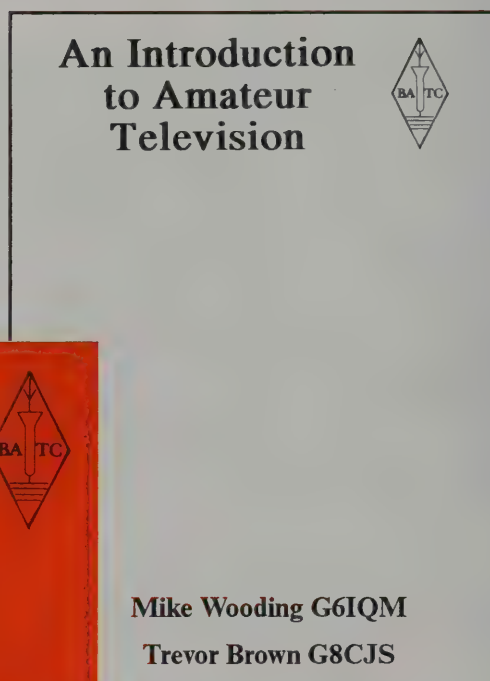
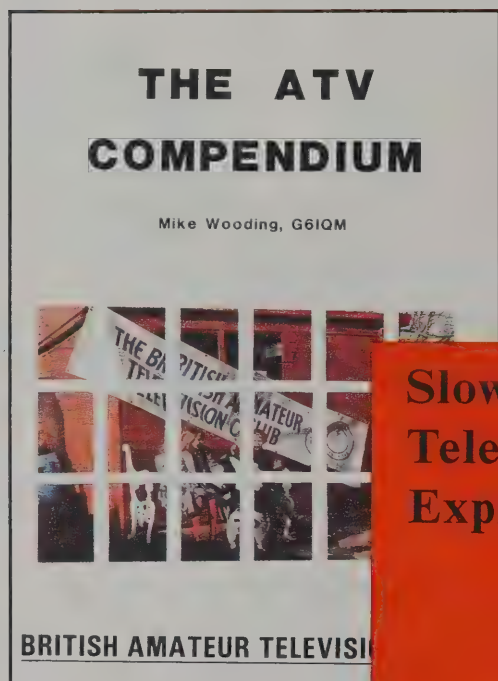
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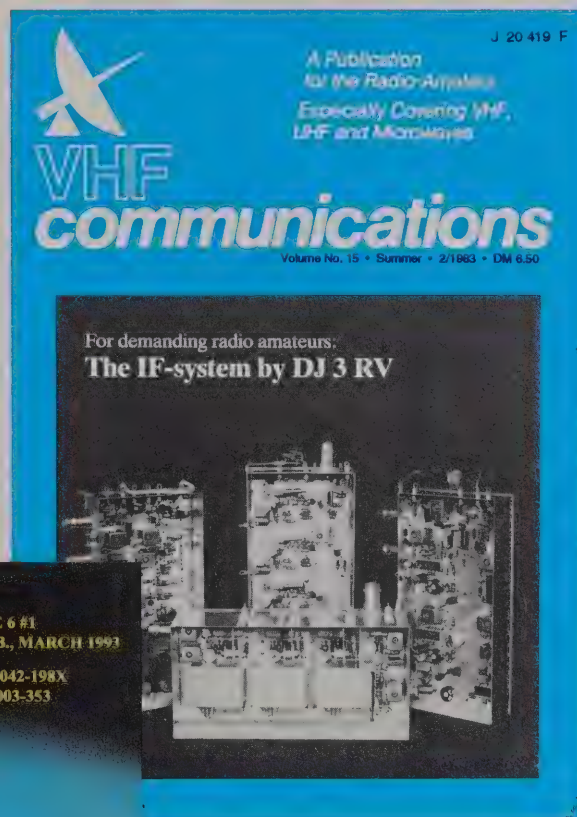
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JAN., FEB., MARCH 1993
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TO PRE-EMPHASIZE OR NOT

Bryan Davis, K3AAF
Sr. Engineer, Microdyne Corp.

While designing the 912/1250 MHz Video Linking system, see page 55 of ATVQ -- Spring 1995, I had to design a Test Signal source to test the model 1100 BKR receiver under the constraints of HAM Radio bandwidths. The following spectral data was captured from an HP spectrum analyzer model 8561B. All data is referenced to 5 MHz peak Deviation (flat - no emphasis), a switch changed to the Pre-Emphasis mode. Figure 1 shows a sine wave of 2.079 MHz at 1 volt P-P input and a carrier null calibrating the 5 MHz peak deviation. The switch was changed to the Pre-Emphasis position and the results are shown in Figure 2. Notice that the first sidebands are nearly nulled indicating a higher modulation Index (Mod. Index) as well as the highest sideband is visible 6 MHz higher than in figure 1. Figure 3 and 5 show a 1 volt P-P input signal from a Tektronix 147A, using the Flat mode (no Pre-emphasis). Notice that the highest signal is ± 15 MHz. In Figure 4 and 6, Pre-emphasis is applied to the 1 volt test signal and now the highest signal is ± 18 MHz and the low frequencies are of lower deviation.

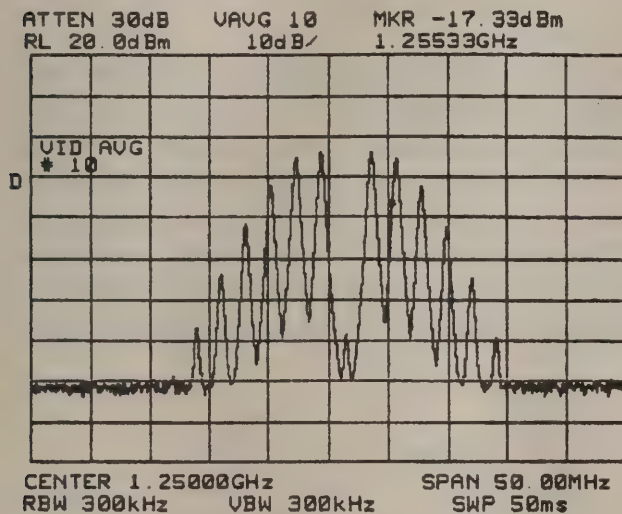


Figure 1

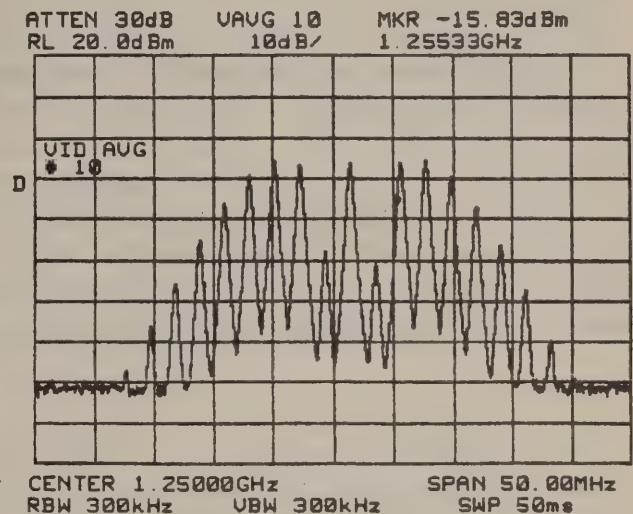


Figure 2

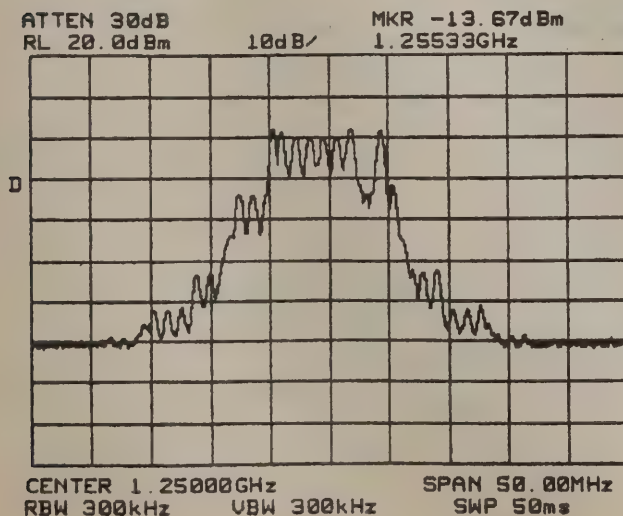


Figure 3

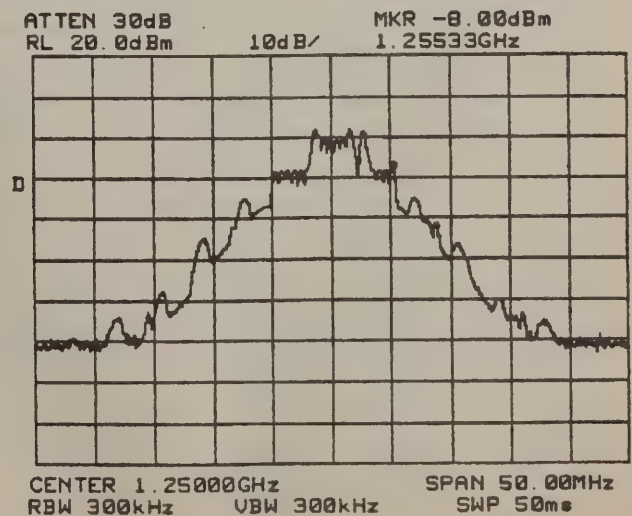


Figure 4

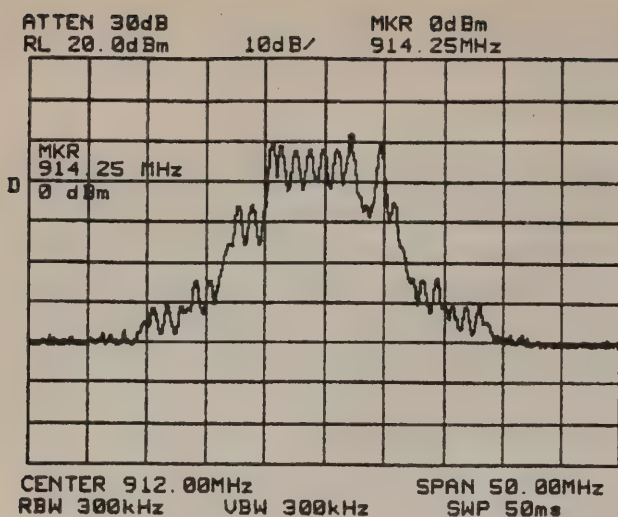


Figure 5

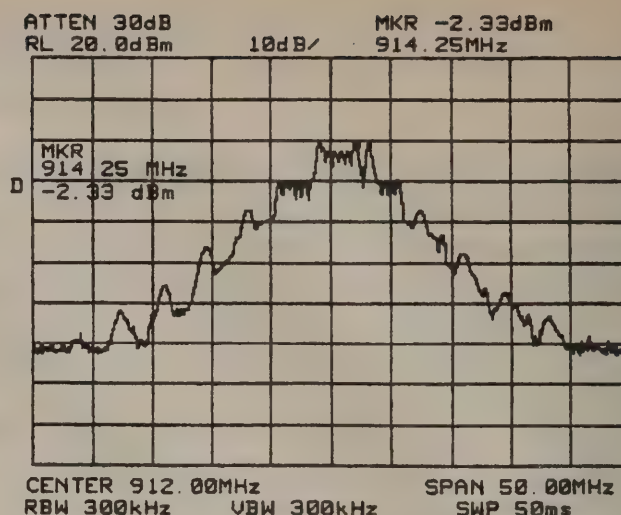


Figure 6

Figure 7 is the schematic of the test signal source. The VCO is an Avantek VTO-8090 MIC oscillator that puts out about +13 dBm. The tuning curve is also shown, in volts vs frequency. This device sells for about \$90, I have a few extra (for sale) if anyone wants one. I would, however, recommend a unit from Z-COMM, California, model V-1075 (800 - 1350 MHz) is \$10.95 or model V-1400 (900 - 1900 MHz) that sells for \$15.95. If you need some other frequency, Z-COMM claims to be the largest USA VCO supplier with over 300 VCO products from 40 MHz to 4 GHz, telephone (619) 621-2700 or Fax (619) 621-2722. Figure 8 shows the Pre-emphasis schematic and curve for the network used in these tests. Figure 9 shows the matching De-emphasis network schematic and curve.

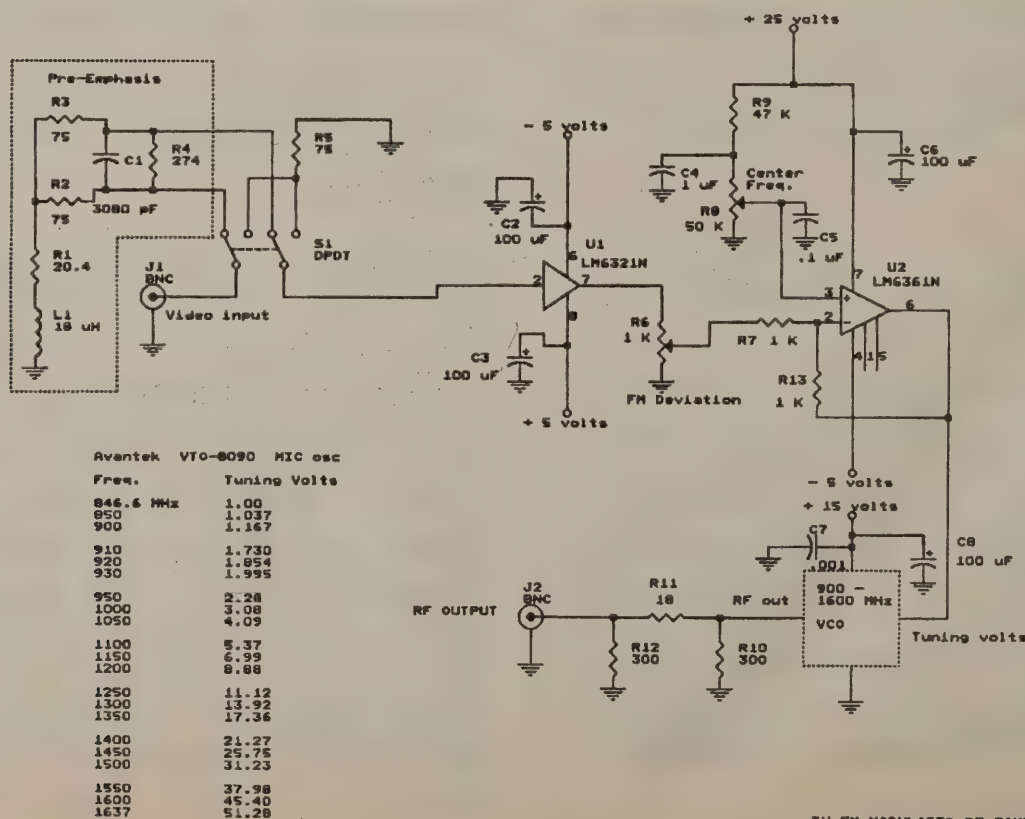


Figure 7



Figure 8

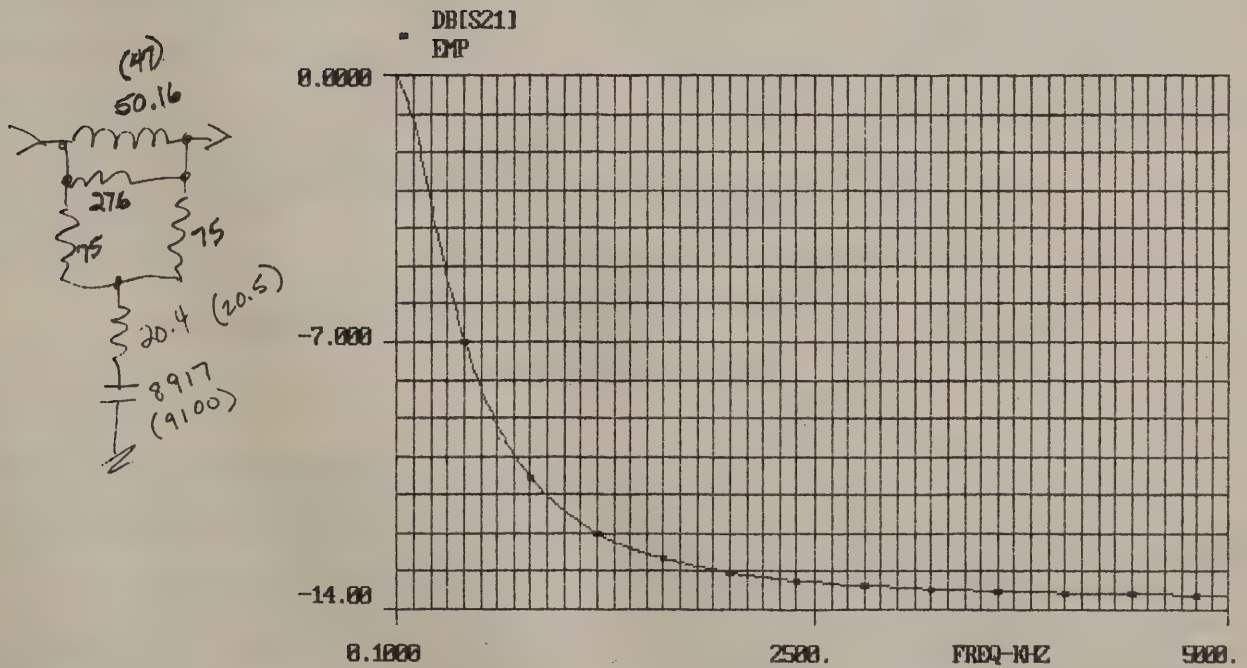


Figure 9

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CONCLUSIONS

I have run sensitivity tests with FLAT and Pre-emphasized Video and find that noise occurs at the same signal power input level to the 1100 BKR receiver. The noise however has a different effect on the picture for FLAT than it does for Pre-emphasized video. The De-emphasis/Pre-emphasis used in this test is the same used for Satellite TV which has much greater FM deviations or a Higher Mod. Index and perhaps it should be different for this application. One might liken this to the difference between Broadcast FM (75 KHz deviation) vs two-way communication (5 KHz deviation), I'm not sure. In any event the FLAT video requires less bandwidth so a narrower filter can be used and this will improve the Signal to Noise Ratio (SNR). I use FLAT video on all my video links.

Also, the VCO is quite stable. I put 1 inch styrofoam all around it, and in an air-conditioned room it doesn't drift more than ± 100 KHz using a regulated 15 volt power supply (MC 7815). If one wanted a more stable source, this source could be synthesized by adding a Motorola MC 145191 or similar chip. This Motorola chip works up to 1100 MHz so a divide by 2 that works up to at least 1300 MHz would be needed for operation at 1250 MHz. This could be the subject of a future article if there was enough interest. Just add a 20 dB gain amplifier capable of putting out 1 watt to this source and you have a 1 watt transmitter. A 1 watt transmitter is good for about 10 miles if one has 14 dB gain antennas and low loss feed line at each end of the link. If higher power levels are required, DownEast Microwave have excellent amplifiers that will take this 1 watt to higher levels.

CHICAGO FM ATV REPEATER

Subj : Chicago ATV Repeater
From: rkeniuk.mot@radiomail.net (Rick Keniuk)
Reply-to: envoyrf2@radiomail.net (Rick Keniuk)
To: atvq@aol.com (Henry Ruh)
Dear Henry,

In the last two months the N9DUA/R Chicago FM ATV repeater has been functioning flawlessly. The output on 915MHz with 250W ERP has been seen P5+ 40 and 50 miles away. At home, I am using a 3 foot long yagi at 20 feet off the ground. My received signal is P5 with 10dB to spare! The input of the repeater is on 1252MHz FM ATV. A 12 foot long loop yagi and 1W at 35 feet high from Cary (40 miles) yields a P5 input signal. A P3 picture was reported in Rockford with a portable station and P5 pictures have been seen all over the Chicago area. W0UL from Fort

Dodge Iowa (330 miles) was seen on the 1252MHz input! The Chicago area has probably never had such a powerful repeater as this. The repeater is located on the top of the Sears building, about 1300 feet above ground with 60+ mile line of sight. I will send you a technical information paper for next issue. A 1.2GHz input 2.4GHz output FM ATV repeater is also on the drawing board. Happy ATVing Rick Keniuk N9DUA (708) 639-4336.

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ASSOCIATES

Special Olympics and Amateur Television:

by Fran Miele N1GAU

25 Kimberly Ln, East Haven, CT 07108

The Southern New England Amateur Television (SNEATV) group, an informal organization, was contacted through Fran Miele, N1GAU, in May 1995 and was asked to provide ATV coverage of the Sailing venue for the Special Olympics Worlds Games 1995 which was being held on Long Island Sound at Savin Rock in West Haven, Ct., about 1 mile off shore. The idea was to try to provide visual aid to the staff on shore, from a public safety point of view, so that officials could react quickly to any problems. As time went on and the word of ATV capability



Photo #2 is of Peter Pahlsson's cabin cruiser, the DAYENU with Mark Osbeck, WB1CMV, along with Peter and his family. The Home made yagi is seen standing above the boat and a Panasonic SUPERCAM is mounted on the stern.



Photo #1 is of Ray Ponticelli, N1GBI operating one of the donated Panasonic SUPERCAM cameras while it is mounted on the stern of Frank Way's 35 foot cabin cruiser .

spread the group was asked if they could provide the same signals to Olympic Town, an area setup for demonstrations to the athletes and their families, four miles inland. What a way to advertise HAM Radio and ATV!

The SNEATV group started planning and gathering volunteers. Seventeen HAMS (some ATV'ers and some not), N1JTL, Harry Abery; K1KRP, Les Andrew, Jr.; K1ILH, Chet Bacon; K1IOY, Lenny Brown; N1DYX, Bill Childs; W1WVJ, Bob Doolittle; N1LMK, Burt Hirsch; N1GAU, Fran Miele; WB1CMV, Mark Osbeck; N1GBI Ray Ponticelli; W1NRE, Lyn Cyr; N1RFD, Mike Fontana;

KB1AEV, Dana Underhill; N1FNE, Rodney Lane; K1ZZ, Dave Sumner; K1I2D, Linda Sumner; and N1URO, Brian Rogers; as well as two non-HAMS, to operate cameras, Gene Palin and Carolyn Barter volunteered. In addition three boat owners volunteered the use of their boats, Frank and Melissa Way who brought along another volunteer Dave Saunders provided their boat, the CLASSEA, for the whole week, Peter Pahlsson along with his family provided their boat, the DAYENU, for three days and a third boat, the MITOI, was provide by Martin Wolinski for several days.

The project required more than just people. Boats, HAM equipment, Cameras, and a lot of ingenuity were needed. Many HAMS were reluctant to use their personal camcorders because of the fear of salt water damage, a major concern for all equipment. However, through the efforts of the Special Olympics Commissioner of Photography, Panasonic donated the use of their new Supercams and tripods were donated by Connor. Individuals used their own HAM equipment as well as some YAESU handhelds that were donated by YAESU.

The Sailing committee representative, Jack Cunningham, indicated that there would be two race courses requiring concurrent coverage and that they



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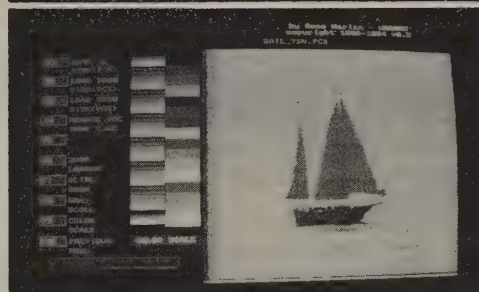
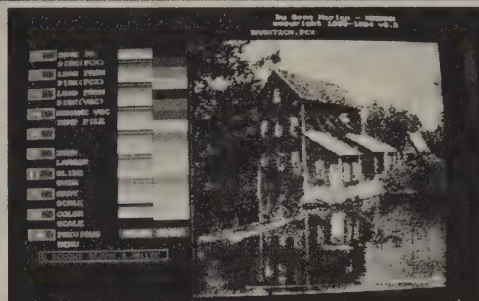
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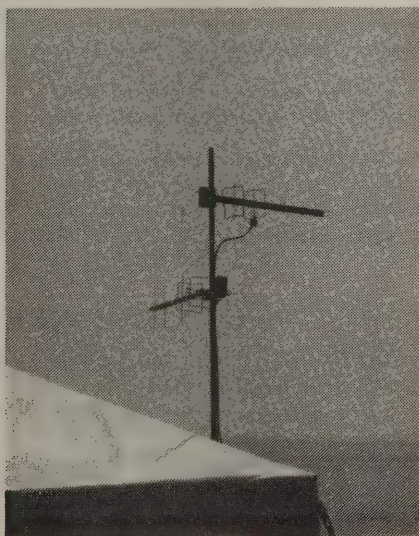
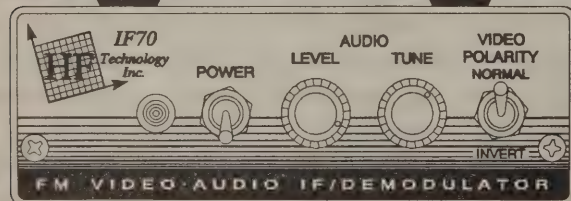
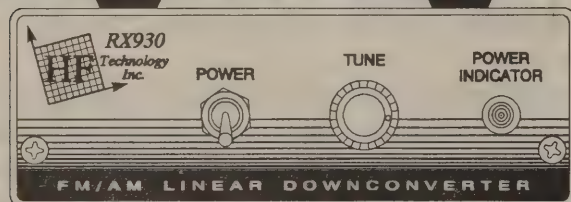
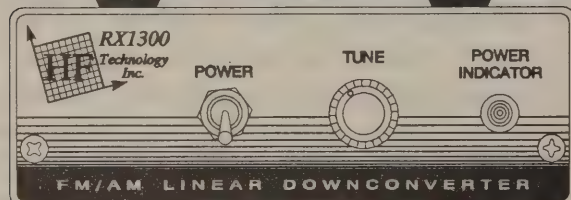
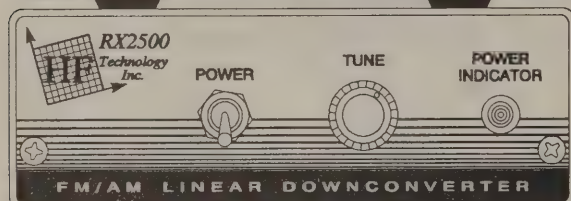
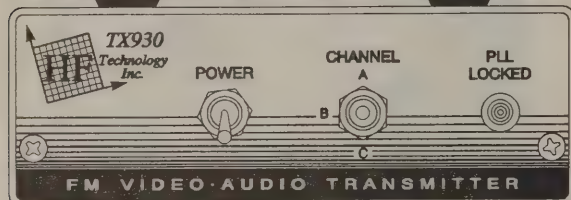
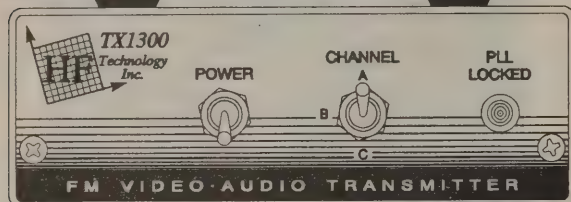
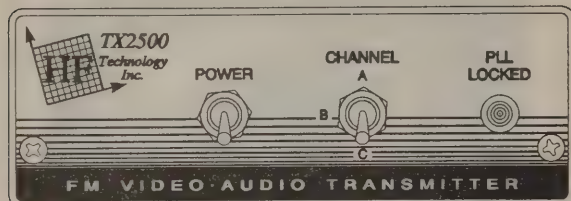


Photo #3 is of the receive home brew
quagi's mounted above the tent on shore.
Each was connected to a 27" television
and VCR in the tent.

would be about one mile apart. The signals needed to come back to one central location and would be viewed on 27" televisions. The SNEATV team decided that the best way to minimize adjacent channel interference would be to use directional antennas, even though keeping them directed to a fixed point on land from a moving boat would be a major chore. WBICMV volunteered to manufacture some quagi's, NIGAU went to Horse Traders flea market to purchase feed line and connectors, and the Olympic Sailing committee arranged for boats.

Once the antennas were completed several of the SNEATV members started testing adjacent channel interference. Knowing that the courses were approximately one mile apart the team setup a similar scenario on land. NIGAU's house is situated at the intersection of two streets that provided line of sight for about 300 ft. and the angle of the intersection in relationship to the house was similar to the way the courses were situated. So a tower section was erected on the front lawn with two antennas, one cut for 434 (vertical) and the other cut for 426.25 (horizontal), and two TV's. Two mobile units, KAILH and WBICMV, went to the end of the streets, with 10 watt transmitters and the test began. Wow!!! No interference!! The next test would now be conducted at the shore, unfortunately the boats were not available yet. The



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Special Olympics and Amateur Television:

test would be from shore to the location were Olympic Town was being constructed, next to the Connecticut Tennis Center, a nice multi-story facility.

The test proved that a simplex signal was P3 and not adequate with the antenna 20 ft above the ground. The local ATV repeater, WINRE, wasn't holding the color either. WAIWVJ was monitoring the repeater and suggested that a yogi could be installed at the repeater site, pointed at Long Island Sound, and this should improve reception at the repeater. WAIWVJ contacted WINRE and a yogi was installed and tested. In the mean time NIGAU contact the Tennis center and received permission to install a 440 receive antenna (KIFO), an ATV down converter, 900 MHz Rabbit and a 900 MHz corner reflector antenna. This would be used to receive the simplex frequency from one boat and the signal would be down linked to the ground location via 900 Mhz. NIFNE modified the 900 MHz rabbits, so they would accept external antennas and power, for the down link. The 900 MHz signal would then be feed to an AMIGA FLYER computer system and the output sent to the Hospitality tents 1000 ft. away. The AMIGA system also allowed recorded video to be viewed when a live signal wasn't available. Unfortunately, there wasn't adequate time to test the Olympic Town installation but everyone was confident it would all work. The repeater would be used as backup in case the simplex signal was in adequate to the top of the Tennis Center.

The major problem was the installation of the cameras, transmitters and antennas on the boats. Worse yet, just 4 weeks before and the team still didn't know what type of boats they were dealing with. At first the boats were going to be cabin cruisers (dry boats), then they were changed to Boston Whalers (wet boats), then back to cabin cruisers. Finally it was decided that the boats would be cabin cruisers but non of them could be available for the whole week of the Special Olympics. NIGAU and NIGBI went out and checked each boat to see how the antennas could be mounted and how power for the camera and transmitter would be provided. Fortunately, each boat had adequate battery power and railings that the antennas could be mounted to with clamps. NIGBI went back home to manufacture some mounting brackets that would fit the 1 " railings on the boats. The antennas would need to be rotated by hand.

While all this was happening NIGAU was busy developing a coverage schedule. The Special Olympics were being held during the week, so many of the team members had to work, several were on vacation, but all in all there

was enough flexibility to cover every day. It was decided that 3 people were needed on each boat, one to run the camera, one to turn the antenna and one to communicate to shore. On shore two people were needed, one to communicate to each boat and one to communicate with Olympic Town. At least two people, more would be better, would be required at Olympic Town. One to monitor the 900 MHz signal on the ground and direct boat "A" to adjust the transmit antenna, and one to make equipment adjustments at the top of the Tennis Center. Additional staff would be used to alternate the person running to the top of the Tennis Center, at least 5 stories up without an elevator. NIGBI was named the team leader for boat "B", WBICMV was named team leader of boat "A" and N lone was named team leader for Olympic Town team. The rest of the volunteers were given assignments based on their different skills and familiarity with ATV. Everyone played an important role in the operation.

July 1st was rapidly approaching. Equipment couldn't be installed on shore until June 29th and 30th. On June 27th NIGAU and NIFNE went to Olympic Town and installed the antenna systems and 1000 ft. of cable to the TV's. The receivers and down converter couldn't be installed until the first day of sailing, July end., On Thursday, June 29th, NIGAU and KAILH when to the sailing venue and installed three quagi's. It had been decide that there would be three TV's, two in one viewing tent and a third in a hospitality tent.

July 1st arrived and a handful of the volunteers headed to their respective assignments to do some live testing from boat to shore while the sailing athletes practiced.. Access to Olympic Town for testing was unavailable.. Everyone had their fingers crossed. Boat "A" setup and began transmitting, NO PROBLEMS !!! A P5 picture to shore. Boat "B" setup, turned on the camera and ATV transmitter, the camera shut down by itself, NOT ENOUGH POWER from the boats battery. Boat "B" switched to its backup plan, battery packs for the camera, HOORAY !!!, VIDEO !!! A P5 picture to shore. Day two, Boat "B" has a mechanical breakdown and transmission from that sailing course is stopped for most of the day. Day three, operations continue with just one boat, all goes well. Day Four, Boat "B" is back on the scene and from that point forward everything runs as smooth as silk. Everyday more and more family members of the athletes visited the tents and were ecstatic at being able to see the athletes in action. Simplex reception at Olympic Town was a P4 signal most of the time and very acceptable for viewing. The antenna

Special Olympics and Amateur Television:

operator on Boat "A" had to pay close attention to the direction that antenna was pointed in order to maintain a good simplex signal. This was the only boat that had a direct line of

sight with both the sailing venue and Olympic Town. A job well done by the ATV community and all the associated volunteers!!!! Fran Miele (N1GAU)

ATV at the 1995 Special Olympics World Games

By Brian Battles, WS1O

Deputy Commissioner, Amateur Radio Operations 1995 Special Olympics World Games

Hams play an important part in ongoing local Special Olympics events around the US, and more than 500 Amateur Radio operators donated their time and services to the 1995 World Games. The Special Olympics Games Organizing Committee (GOC) enthusiastically accepted the offer to have Amateur Radio operators set up a special-event station and booths to send free radio messages. But one of the biggest stars of the show was the amateur television (ATV) operation at the sailing events.

When I joined the World Games project in the fall of 1994, we simply planned to set up two NTS radiogram booths and a special-event station. By the time we were through, however, we had also manned the main Operations Center, run communication support for the bicycle races, the road races, the shuttle bus dispatch centers, the parking coordinators, the Honored Guests transportation center, fly-in and fly-out activities at the airport, and provided voice and live amateur television (ATV) coverage at the sailing events. About 25% of our services were planned in advance; the rest just happened. Even with so many last-minute assignments, volunteer hams were able to come through with every task asked of them.

Serving as Project Managers delegated with the responsibility of staffing, equipping and operating their respective elements, were Neil Salowitz, WA1CBW, special-event station; Jim Ritterbusch, KD1YV, and his daughter, Michelle, N1PNT, NTS; Dick Phelps, K1SW, and Jim Pompano, N1KLB, road events; and Fran Miele, N1GAU (ATV), and Bill Blewett, N1EGL (voice), sailing. Lance Seelbach, N1TAN, acted as human resources manager, fielding telephone and e-mail inquiries, maintaining a data base of hams, and working with the GOC staff to secure credentials.

The promenade directly encircling the Yale Bowl was dubbed Expo Park, the centerpiece of the week's action. Across the street, on the grounds adjacent to the famous Connecticut Tennis Center, home of many major international professional tennis tournaments, Olympic Town was constructed. This was a giant midway where athletes and their families, coaches and other delegates could, socialize, see musical performers and other entertainment, enjoy cultural exhibits, and just relax and mingle.

Prominent signs posted at the ham radio tents in Expo Park and Olympic Town offered to send free radiograms on behalf of the athletes, their families, spectators, other volunteers and anyone else who asked. More than 1200 NTS radiograms were originated by the traffic crew.

Special-Event Station W1SO

One exciting aspect of the Games was the special-event station, appropriately identified as Whiskey-One-Special-Olympics, using this ideal call sign through the kind courtesy of Bill Carpenter, W1SO, of Bristol, Connecticut.

There were three operating positions. Two seats were equipped with Yaesu FT-1000D transceivers and FL-7000 power amplifiers, each feeding a Cushcraft R-7 vertical antenna. The third operating position was set up with a Yaesu FT-736R all-mode transceiver feeding Cushcraft Yagis on 50, 144 and 430 MHz. Hams made more than 1000 contacts around the world. Some of the clubs that participated at the special-event station included the Radio Amateur Society of Norwich, Newington Amateur Radio League, Greater Norwalk ARC, BEARS of Manchester, QCWA Nutmeg Chapter, Valley ARC, Pioneer Valley Repeater Association (PVRA), Stratford ARC, Southern Connecticut ARA, Milford Repeater Association, Shoreline ARC and Stamford ARC. Thanks also to Larry Skilton, K1IED, of the PVRA, for some helpful adjustments to the station and for spending a couple of evenings flying solo to keep W1SO on the air until midnight.

ATV at Sea

The GOC staff and commissioners working at the sailing events were 100% thrilled and amazed at the practical capabilities of ATV. Fran Miele, N1GAU, became the Project Manager of ATV operations for the sailing events. Bill Blewett, N1EGL, volunteered to manage voice amateur communication for the sailing events. These people did a superb job of organizing their respective areas.

Sailing used amateur base stations in the operations center to communicate with hand-held transceivers and provide the primary interface with repeaters for communication with other command centers and the main GOC Operations Center.

The sailing events were held on Long Island Sound off Savin Rock in West Haven, Connecticut, about a mile offshore. Fran, N1GAU, and I got together on the telephone, where I explained what might be needed and he told me about the Southern New England Amateur Television (SNEATV) group, an informal organization, and how they might help. The main idea was to provide visual aid to the staff on shore for public safety monitoring so that officials could react quickly to any problems. As word of ATV capability spread, the SNEATV was asked if it could transmit the video to Olympic Town, four miles inland.

ATV at the 1995 Special Olympics World Games

To equip the ATVers, Panasonic donated the use of its new Supercams, and Connor donated tripods. Individuals used their own ham equipment and there were dual-band hand-held FM transceivers, spare batteries, chargers and speaker-mikes furnished by Yaesu.

Mark Osbeck, WB1CMV, built antennas, Fran purchased feed line and connectors, and the Special Olympics World Games Sailing Committee arranged for boats. The local ATV repeater, W1NRE, used a Yagi to pick up the signals from the boats. Fran installed a 440-MHz receive antenna, an ATV downconverter, 900-MHz Rabbit and a corner-reflector antenna at the Connecticut Tennis Center to downlink the video to the ground on 900 MHz. Rod Lane, N1FNE, modified the Rabbits so they'd accept external antennas and power. Ray Ponticelli, N1GBI, made mounting brackets for the boats. For the officials and the public to watch the activities, two TVs were installed in one public viewing tent and a third was in a hospitality tent. Members of athletes' families visited the tents and were ecstatic at being able to see the athletes in action. A highlight came one afternoon when the parents of one of the athletes commented to the amateur who was monitoring the TV displays on shore that their daughter was sailing in Hobie Cat number 22. The ham called the ATV boat and asked them to try to get her on video. They called back asking for the girl's name, and then they yelled over to the sailboat, calling the athlete by name, with the result being a close-up of the smiling and waving Special Olympian filling the screen.

The ATV operation at the 1995 Special Olympics World Games was an exceptional project. It was one of the most direct ways the public was made aware of Amateur Radio's participation at the Games. It was also extremely useful and practical to ensure the safe and enjoyable functioning of the sailing competition. Special Olympics Sailing Commissioner Buzz Reynolds and Support Services Manager Jack Cunningham were almost beside themselves with pleasure and appreciation for the exceptional work done by the ATVers. As overall boss of all the ham radio operations, I had my share of questions, requests, complaints and challenges to handle. Amazingly, barely a peep came from the ATVers, who handled their technical and very visible operation without coming to me with constant concerns or problems. Fran proved to be an extraordinarily competent and professional Project Manager, keeping me well informed on his group's progress, and his team handled all situations and minor difficulties themselves, using their own ingenuity and common sense. My hat's off to the members of SNEATV and the other volunteers.

Some of the hams

at the sailing events included

Fran Miele, N1GAU; Bill Blewett, N1EGL; Les Andrew Jr, KA1KRP; Chet Bacon, KA1ILH; Lenny Brown, KD1OY; Bill Childs, N1DYX; Bob Doolittle, WA1WVJ; Burt Hirsch, N1LMK; Harry Aberly Jr, N1JTL; Mark Osbeck, WB1CMV; Ray Ponticelli, N1GBI; Lyn Cyr, W1NRE; Dana Underhill, KB1AEV; Rod Lane, N1FNE; David Norton, N1JXX; Dave and Linda Sumner, K1ZZ and KA1ZD; and two nonhams to operate ATV cameras, Gene Palin and Carolyn Barter.)

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Not enough can be said to thank the generous companies that provided their finest equipment for use at the 1995 Special Olympics World Games. Special-event station W1SO used Yaesu FT-1000D and FT-736R transceivers, and FL-700 power amplifiers, feeding Cushcraft R7 and VHF/UHF Yagi antennas. The NTS radiogram message centers had Yaesu FT-5100 dual-band VHF/UHF FM mobile rigs with AEA PK-96 TNCs and Cushcraft Yagis. At the other events, hams used Yaesu FT-5100s and FT-530 dual-band VHF/UHF hand-held FM transceivers. All of the feed line used at the stations was top-grade coaxial cable from Times Microwave Systems.

We appreciate the efforts and personal assistance of Jack Pelzman of Yaesu; Eric Zackula of AEA; Ken Albertson, KA1VMR, of Cushcraft; and Joe Lanoue, K1VDZ, of Times Microwave.

Every ham who participated can be proud of the exceptional job done by all at this once-in-a-lifetime world event, and the appreciation and admiration expressed by all of the officials, spectators and other volunteers. All radio amateurs can be proud of their fellow hams from Connecticut and elsewhere who helped, knowing that we did our part, came through when we were needed, introduced many people from around the world to this service, showed the world the value of Amateur Radio, and provided great athletes with the security and safety that comes from communication.

Gautier, Mississippi

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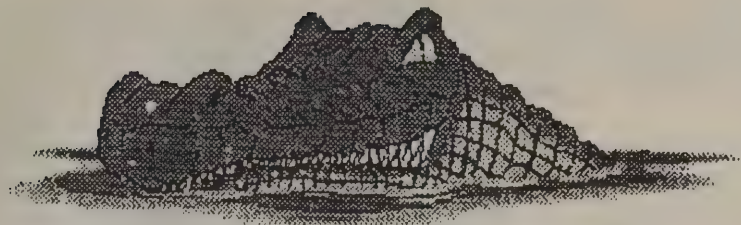
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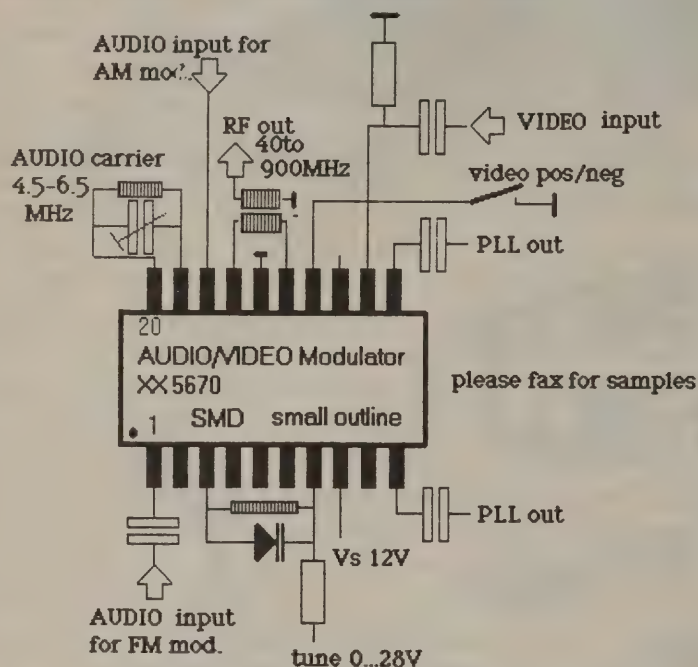
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A comment on keeping commercial TV out of a downconverter for ATV.

The Baltimore ATV Repeater (W3WCQ) is on the top of the building about 2 or 3 airline miles from a commercial TV station (Ch 45) and we have been trying to make a 1253.25 MHz input work. It seemed that no matter what I did, Ch 45 would find it's way into it and bring up the repeater. I put enough filtering on the front end to just about attenuate the sun and it still got in. It then occurred to me that the IF out had close access to the mixer, and it might help if I filtered the output for Ch 45 also. I put a Ch 45 filter right on the IF out right at the downconverter which is at the antenna and the problem went away.

Some repeaters or users won't have a similar problem, but in a city with many UHF TV stations, it can give you fits. If you have a problem like this, try filtering the IF out to make sure that it is not the cause.

Have fun. Heru, W3WVV

SYNC DETECTOR PROBLEMS

Heru, W3WVV

BRATS operates the W3WCQ ATV repeater in Baltimore and we recently bought a VS-100 controller.

One of the problems with the controller is the sync detector. It doesn't always recognize sync of an incoming video signal because it does not separate the sync from the composite video and sometimes picture content can cancel the sync signal so that the xx567 tone detector sometimes says "no picture".

We tried the 1881 sync stripper and it did not work on weak signals. We tried a transistor amplifier and filter and it had the same problem as the '567 by itself, some pictures would not give a true output from the '567.

Most of the pictures that were not recognized were from computers but not all. One of our users had a signal that worked if he moved to the edge of the picture, but when he moved to the center of the picture, the repeater went down. Some other live pictures also were rejected.

I suggested that since TV sets will lock up on a very noisy signal we ought to use a TV sync separator ahead of a '567. I found that the sync

separator on a Zenith tuner from several years ago was a single chip and I had several of them. I removed one of them and hooked it up on a bread board for experiment. I found that with a noisy P 1/2 signal, the output was bursts of noise at sync frequency and width. To give a better signal to the '567, I tried detecting the noise bursts with a diode and it gave very good results.

I made a board like the schematic in figure 1. I adjusted the controls as follows:

1) Adjust the 10k pot that controls the DC on the input so that the sync out gives sync with normal composite video in. With very noisy video in (P 1/2 or less) sync is represented by noise bursts (see figure 2).

2) The input to the '567 I adjusted to about two volts peak to peak. I used a 47K pot because that was what Radio Shack sells, any value between 25K and 70K should

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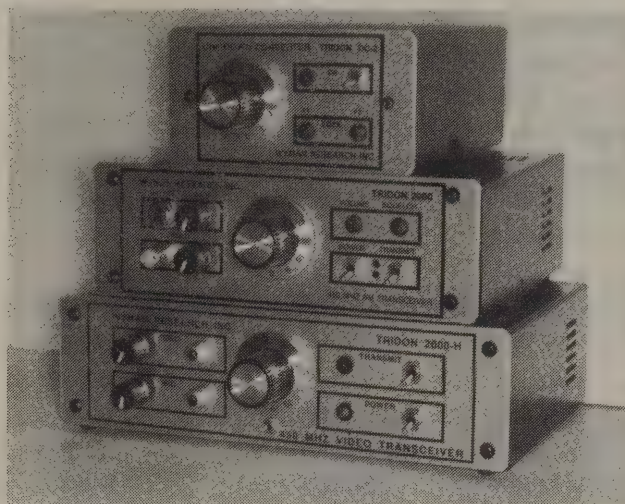
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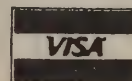
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SYNC DETECTOR PROBLEMS

work. (See Fig 3.)

3) The 5K pot is adjusted so that the '567 recognizes the horz sync frequency.

There are probably other sync separator circuits that will work as well, but I had this one available. The VS-100 controller scans the inputs and when the sync detector recognizes a video signal, it stops scanning on the input with video on it. The original circuit had the take-off for the sync det. on the output of the switch which was a fairly high impedance. The short piece of shielded wire and input impedance of the circuit messed up the video. This was cured by moving the take-off to the output side of the current amplifier (LH0002).

The 470 between pins 6 and 7 plus the 1K to ground from pin 8 are there because it seemed like a good idea. An oscillator is internal to these three pins and the resistors keep reasonable voltages on them.

I have not investigated what that network on pin two does, but it does not work without it. In fact, the resistor values are somewhat critical.

What I have found while making our repeater recognize video makes me suspect that the controller described in the Spring 1995 issue of ATVQ may have similar problems and be improved by replacing the 1881s with another sync stripper, or at least a detector between the 1881 and the '567. Have fun!

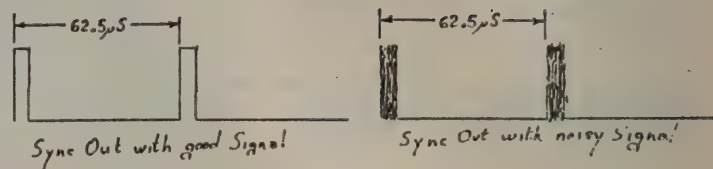
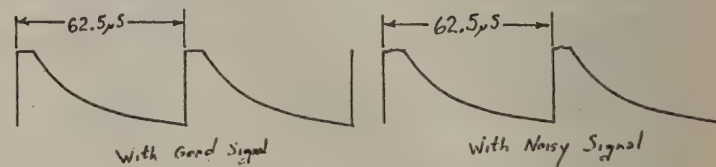


Figure 2.



Waveform to '567

Figure 3

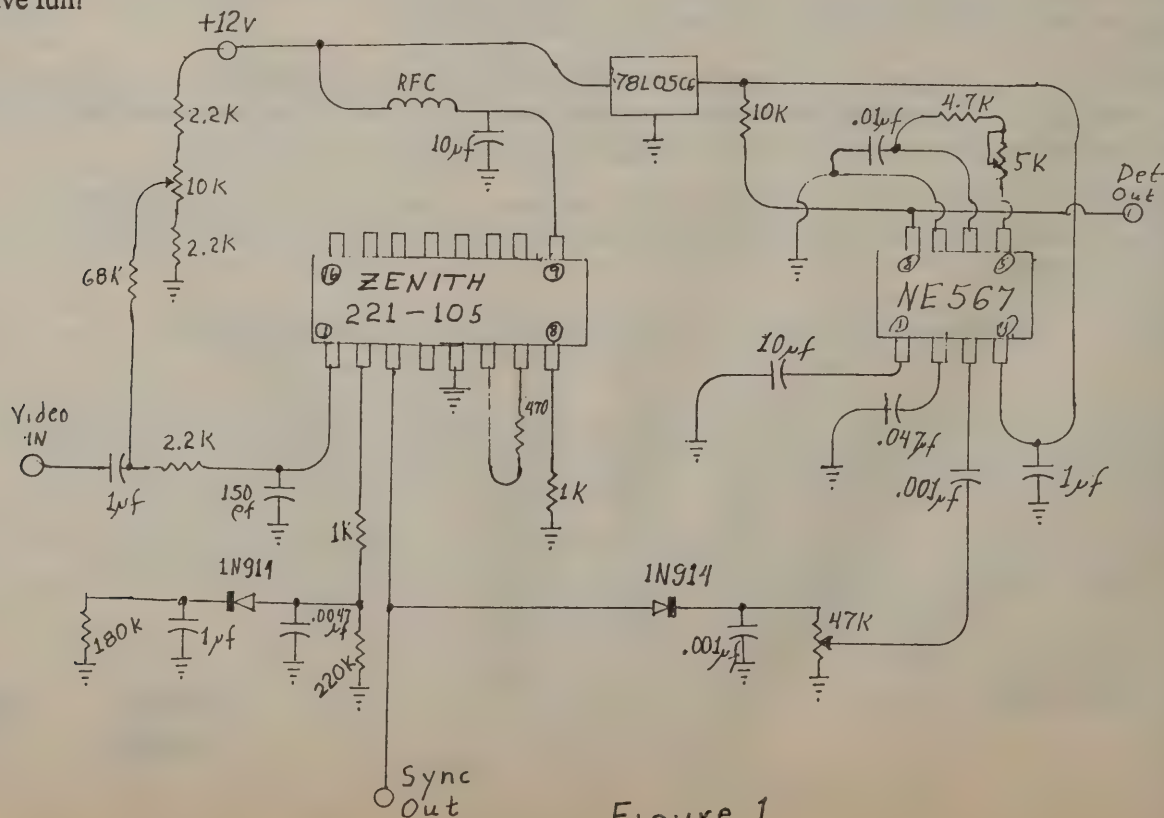


Figure 1

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13 CM FM-ATV EXCITER

The following article describes an FM-ATV exciter for the 13 cm band. Here the authors are going back to a circuit design which has long been tried and trusted. Following the circuit developed earlier for 23 cm, a similar assembly is described here today for the next amateur radio band up (2,320 - 2,450 MHz).

Supplemented by a power amplifier and the necessary baseband preparation for the audio signal at 5.5 MHz, the exciter turns into a complete FM-ATV transmitter.

CIRCUIT DESCRIPTION

Fig. 1 shows the complete circuit for the FM-ATV exciter. The description below concentrates on the essential functioning elements, such as the voltage-controlled oscillator (VCO), the phase lock loop (PLL) and the broadband amplifier.

1.1 The Voltage Controlled Oscillator (VCO)

The VCO (Fig. 2) was designed using reasonably priced standard modules. The capacity diodes are normal UHF types of component. The same applies to the oscillator transistor.

The two tuning diodes, D1 and D2 (BB505G), are directly connected up to the base of the VCO transistor, T1 (BFR90a). The incorporation of these structural elements here is determined by the frequency. All the connections are to be as short as possible!

The 10k /100 combination of resistances between the collector and the base of the transistor, T1, determines its static current. In addition, the counter-coupling works for stabilization through the 10 resistance in the emitter circuit. As regards high frequencies, the collector is earthed through 220pF (disc capacitor without connecting wires!).

The oscillator signal is tapped off at the emitter for the subsequent amplification stages. The connecting wires of the emitter resistance form a coupler. This loose connection avoids, as far as possible, any feedback effects on the VCO from the stages downstream. This oscillator circuit can be adjusted up to max. 2.8 GHz. In the frequency ranges of interest to us, around 2.35 GHz, a frequency variation range of 600 MHz is aimed at using a tuning voltage of 0 to max. 30V. The output power in this case falls from app. 40mW at 1.9 GHz ($U_{\text{Tuning}} = 0\text{V}$) to 30mW at 2.5 GHz ($U_{\text{Tuning}} = 30\text{V}$). Fig. 3 shows the relationships in a graph.

1.2 The Phase Lock Loop (PLL)

Together with a VCO, the SP5070 (IC5) from Plessey forms a complete PLL synthesizer (Fig. 4). This system can be adjusted from 300 to 2,500 MHz. The module comprises a pre-divider with a pre-amplifier and a frequency divider. The latter has a fixed divider factor - the ratio between the synthesizer frequency and the reference frequency is 256:1.

The phase comparator is provided with its reference frequency, derived from an external oscillator or a crystal. The output of the comparator controls the capacity diodes in the VCO through an external transistor (BC848C).

The reference frequency, conditioned by the fixed frequency divider, has to be smaller than the synthesizer frequency by a factor of 256. This means that, for a desired output frequency of, for example, 2,335 MHz, a reference frequency of $2,335 \text{ MHz} / 256 = 9.1210938$ is required.

1.3 The Broadband Amplifier

The amplifier section after the VCO is provided by two MMIC's from Avantek. In all, the circuit yields a maximum of 50mW at app. 20dB amplification. The first stage of the broad-band amplifier is equipped with an MSA0885 (IC1). With its 13dB amplification in the 13 cm band, this MMIC greatly increases the only loosely coupled VCO signal. The function of this stage can simply be checked by measuring for a voltage drop of 4.4V across the 120 resistor.

The desired output level is obtained only with the second stage, an MSA1104 (IC2). 7V can be measured at the similar point as for the previous stage. The static current of the broad band amplifier at any time is set by means of these pre-resistances. For correct dimensioning, independent of the operating voltage, frequency and required output power, the necessary parameters should be taken from the data sheet. And here: $RV = (U_B - U_P) / I_P$ and $PV = U_B - U_P \times I_P$ apply. From these calculations, in accordance with their rating, both resistances have a value of 120 /0.5 W.

ASSEMBLY INSTRUCTIONS

The FM-ATV transmitter for the 13 cm band is assembled on double-sided coated epoxy board measuring 72mm x 53mm. The board thus fits into a standard tinplate housing which measures 74mm x 55.5mm x 30mm.

After being cut to size, the board is first cold silver-plated



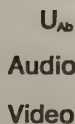
Fig.2: VCO Circuit
(abstimm = tuning)



Fig.3: VCO Frequency and Output Power as a function of U_{Tuning}



Fig.4: PLL using Plessey IC
(abstimm = tuning)



**Fig.5:
Component
Layout on the
Ground Plane
side**

13 CM FM-ATV EXCITER

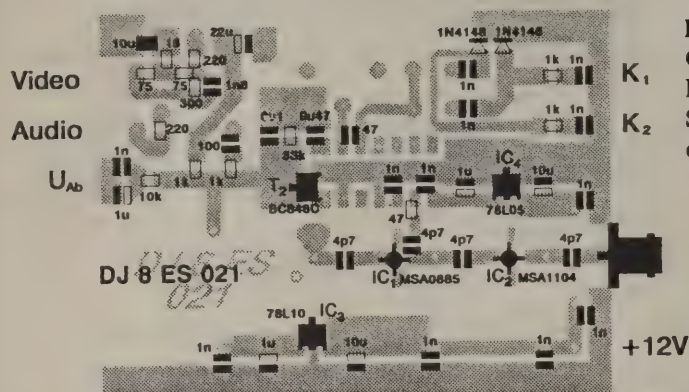
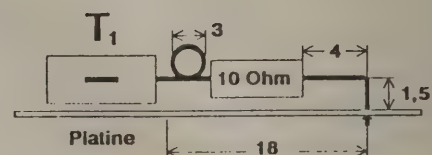


Fig.6:
Component
Layout of the
SMD Components
on the print side



**Fig.8: Dimensions of the Coupler
(platine = board)**

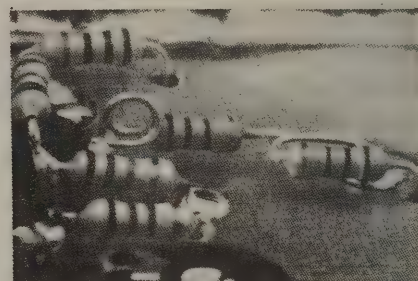
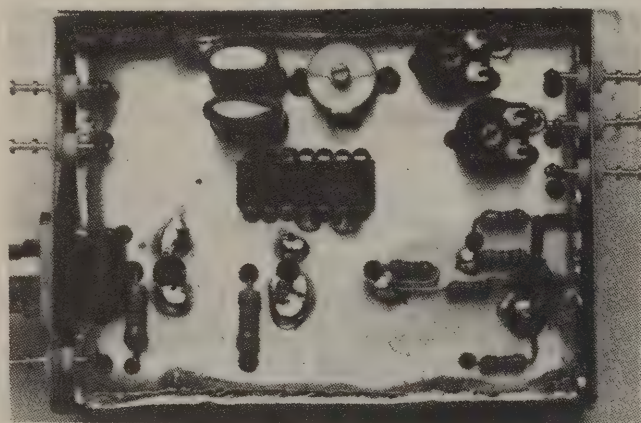


Fig.7: VCO in "Breadboard" format



and finally bored. The broad-band amplifiers lie in the board, and suitable holes must be bored for these. A recess measuring app. 1mm x 8mm should be sawn out on the corresponding board edge.

After the boring, the holes for resistances, trimmers, the crystal, etc., can be drilled on the earth side of the board (fully-coated side) using a 2.5mm drill. The copper surface around the drill hole must be removed.

Once this preparatory work has been taken care of, the board can be sprayed with soldering lacquer. After drying, the earth feedthroughs for the broad-band amplifiers are provided.

The actual insertion does not take place until the board has been soldered into the tinfoil frame. The BNC flanged bush must lie with its flange on the cover edge. If the board is now inserted in such a way that the bush pin touches the track (cut off projecting Teflon collars with a knife first), the top cover must still go on satisfactorily after

the provisional insertion of a crystal.

When the board has been soldered to the lateral surface of the housing, the components can be inserted. SMD components can just as well be used for this as conventional structural elements with connecting wires. Fig's. 5 and 6 show the layout of the individual modules.

The VCO is produced in breadboard format (Fig. 7). It is important here that all connections are made as short as possible! Only in this way can interference from undesirable inductances be avoided.

The coupler is provided by the connecting wires of the two 10 Ω resistances. The same applies for the choke, Dr1, in the emitter circuit.

The diagram below (Fig. 8) shows the most important dimensions for this coupler, and the enlarged photo of the VCO in Fig. 7 shows further details.

13 CM FM-ATV EXCITER

2.1 Component List

IC1	MSA0885 (Avantek)
IC2	MSA1104 (Avantek)
IC3	Voltage reg TA78L10F(SMD)
IC4	Voltage reg TA78L05F(SMD)
IC5	SP5070 (Plessey)
T1	BFR90a (Siemens)
T2	BC848C (Siemens)
D1, D2	BB505G
Q1, Q2	Crystal, see text
(Dr1	1 winding with 3mm dia. in lead of 10 resistor)
2 x	1N4148 (SMD)
2 x	10 , 0.1W, 9mm basic grid
1 x	100 , 0.1W, 9mm basic grid
1 x	1k , 0.1W, 9mm basic grid
2 x	10k , 0.1W, 9mm basic grid
2 x	120 , 1/2W, 12.5mm basic grid
1 x	56 , 1W, 12.5mm basic grid
2 x	Pot, 100 , 5/10mm basic grid
1 x	90pF trim, 10mm basic grid
1 x	220pF, Disc capacitor
6 x	Teflon bush
1 x	BNC socket (UG-290 A/U)
1 x	Tinplate housing 55.5mm x 74mm x 30mm

All other components in SMD format:

3 x	1 F / 20V Tant 1 x 18
2 x	10 F / 20V Tant 1 x 47
1 x	22 F / 20V Tant 2 x 75
1 x	0.1 F Foil 2 x 220
1 x	0.47 F Foil 1 x 300
1 x	10 H Choke 5 x 1k
4 x	4.7pF, ATC chip 1 x 10k
1 x	47pF, ceramic 1 x 33k
1 x	100pF, ceramic
11 x	1nF, ceramic
1 x	1.8nF, ceramic

COMMISSIONING

The following measuring equipment should be available: Multi-range meter, Frequency meter up to 2.5 GHz, Power meter up to 2.5 GHz and an Oscilloscope.

Initially only the +12V operating voltage is applied. The power consumption should be app. 170mA. The assembly should work immediately and supply a signal of something under 2 GHz at a level of 40mW. The VCO PLL is not locked onto a frequency determined by the two crystals, but instead oscillates at its lowest frequency. If the tuning voltage (max. 30V) is now applied and one of the two crystals switched on (+12V at corresponding connection), then the oscillator locks onto the desired frequency. Should this not be the case, then the VCO is oscillating outside the capture range of the PLL. To check the tuning range, the control circuit should be separated at the transistor T2 (BC848C).

The reference oscillator oscillates at about 9 MHz. This can easily be checked using an oscilloscope at pin-9 of the synthesizer SP5070 (IC5). The maximum oscillator amplitude is set using the 90pF trimmer.

When the synthesizer is brought into operation, a video signal and a frequency-modulated 5.5 MHz sound subcarrier can now be connected up and the first practical test can be carried out. The FM deviation is set using the two trim potentiometers.

CONCLUSION

The output level of app. 40mW is naturally too low for an FM-ATV station. With regard to increasing the amplification, various publications are available in the relevant amateur radio literature. An output power of up to 10W is relatively attainable, particularly with modern GaAsFET's.

LITERATURE REFERENCES

1. Wolfgang Schneider (DD2EK) DJ8ES:FM-ATV in GHz Range; Part 1: 23cm Transmitter; VHF Communications 1/89, pp. 25-30
2. Plessey Semiconductors Data Sheet SP5070

VIDEO ID'er REVISITED

I have rigged up a setup for testing video down-converters with known signals (Fig. 1). I start with a channel 3 modulator that has a SAW filter so that I have a vestigial sideband TV signal just like downtown TV stations. After the channel 3 modulator, I use a Motorola MC1350 IC to amplify the signal and have a gain control. The output of the 1350 is fed to a double balanced mixer. For an LO input, I use a signal generator set to 61.25 MHz (Ch. 3 Pix carrier) below the desired frequency. The IF output of the mixer is sent through a directional coupler to an HP spectrum analyzer. The spectrum analyzer gives me a known level of the pix carrier out of the tap of the directional coupler and by adding attenuators I can get any strength signal I want to feed into a down-converter and by using a decent TV set to display the output of the down-converter, I can evaluate the performance and measure the signal to noise ratio.

Now in the above description I did not mention a very important part of the system, a video source to feed the channel 3 modulator. I started out using the video out of a TV set. This was acceptable for B&W, but the video from a B&W TV set was not much good when color became popular. I managed to scrounge up a color camera that had a sticky tube in it. In fact, if you capped the lens while it was looking at a scene, it took five minutes for the pix to disappear. However, this was find for my purpose until it quit. My wife did not like me using her camcorder for a signal, so, this brings me to the subject of the title.

In the July, 1974 issue of QST was a "how to" article on building a B&W call letter ID video generator. It scanned a bunch of horz and vert lines and used diodes to hi and lo voltage video for a black or white (no grays) pix. I was able to acquire one of these gadgets but it was not color. After some thought, it occurred to me that the call letters might be presented in color rather easily.

The Motorola MC1377 color encoder looked like it would be a cinch to add to the circuit so I obtained one and wired it up as shown in the spec sheet (see Fig 4). The inputs are RGB, sync, and a 3.579545 MHz crystal. With only two video signal (letters and background) and three video inputs, I decided to tie one of the signals to two inputs so that I could easily shift the color of one of the pix parts. I tied the letters to R and G and the background to B. This way I can have any variation of Red, Yellow or

Green letters on a Blue background.

It turns out that the 1377 has a driven clamp during the blank and the background signal has no blanking and it must be generated and inserted. Since the video is generated as TTL signal, this is no problem. Just use a 74123 dual one-shot to generate blanking signals a little wider than the sync and mix them in an gate (see Fig 2). I used a 7408. Since the diagrams are simple and not tricky, I won't explain very much about them. One thing I will explain is the sync running through the remaining gates (see Fig 3). Between the sync pulses were ticks from the counter string that showed up as faint vert lines and the gates cleaned this up. The two extra gates would be unused otherwise.

The values for the '123 timing caps are non-standard because I fixed the resistance and then paralleled caps until it covered the range I wanted. If you want to use other values, as long as you wind up with a pulse of the proper length, be my guest.

After trying several combinations, I wound up with yellow letters on a blue background. You can choose whatever colors suit your fancy. The nice thing about this project is you wind up with a color video ID source is that you have bragging rights for building and it is cheap if you already have on the shelf a B&W ID'er.

Have fun! Heru, W3WVW

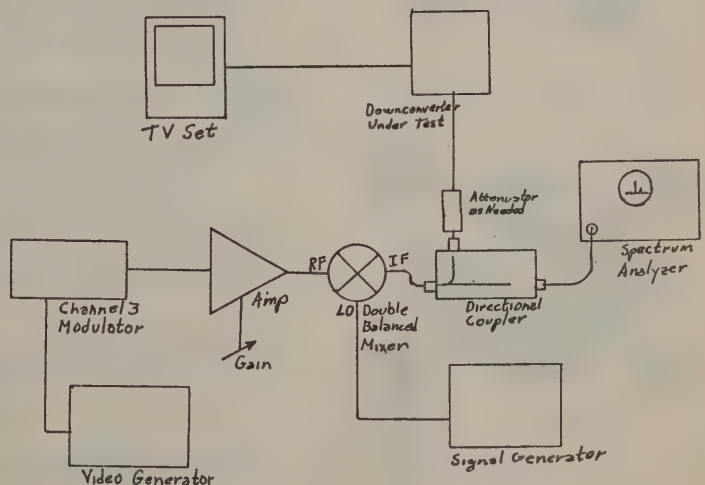
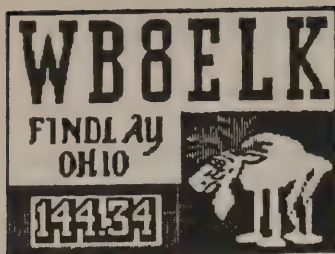
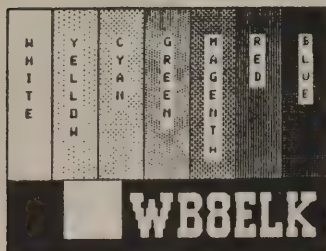


Figure 1



ELKTRONICS

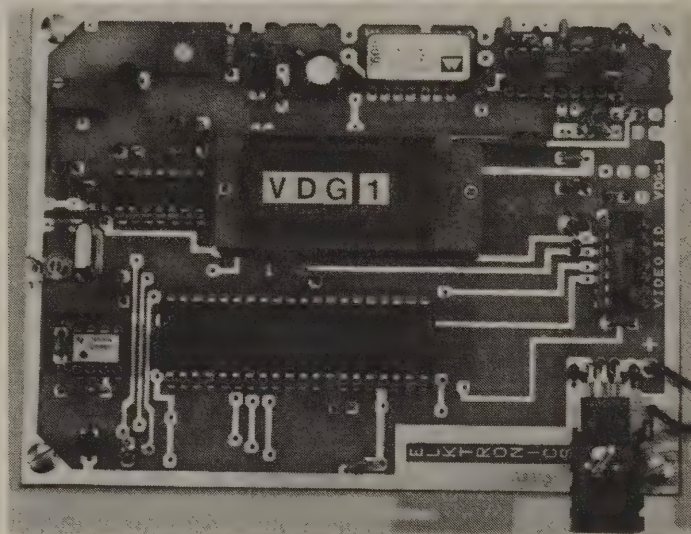
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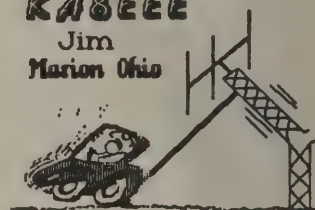


N2CAI /r



KA8EEE

Jim
Marion Ohio



KA8ZNY

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- Instant Video Source
- 4 Graphics Screens
(2 Hi-RES / 2 Colorbar)
- 12 V D.C. Operation
- Video Relay for switching in
live camera video
- Built-in Sequencer/Timer
(Steps through all 4 screens)

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Custom Callsign Logo

- \$99 ppd.

(Quick-release socket option)

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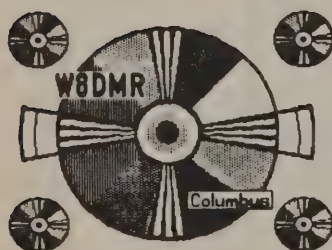
**Call or Write for CATALOG
of available Graphics**

Additional Programmed EPROMS

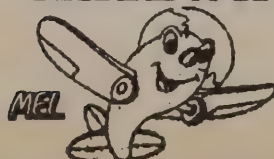
- \$19

Now available as a Kit

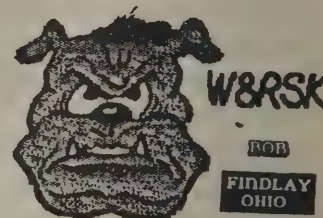
- \$89 ppd. Blank PCB - \$19



KA8LWR



IN BUCYRUS, OHIO



KA8WLW

WHERE NO ATV'er
HAS GONE BEFORE

AN INTERDIGITAL FILTER FOR ATV

from ATCO Newsletter

BUILD INTERDIGITAL FILTERS FOR ATV

OK.. I did say that I'd publish something in this issue about my interdigital filter experiences. Well here goes.

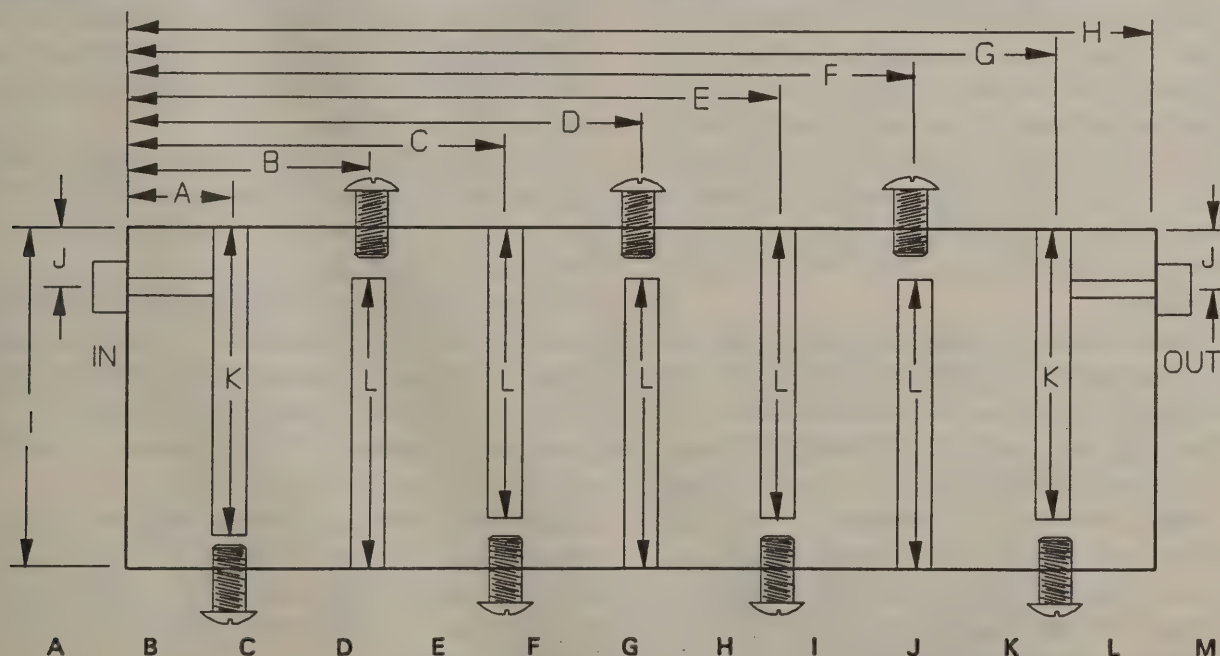
First let me come right out and say "these are not construction projects for everyone". Quite bluntly, they're a $\#\%&^*$ to construct correctly and even worse to tune up. With the proper equipment they're probably a breeze...but not many of us have a machine shop along with expensive network analyzers. Nevertheless I managed to get both the 439 and 1280 mhz filters working. The 439 filter was the easiest to tune but 2 days of diddling with the 1280 mhz unit failed to produce the optimum adjustment (I don't have a sweep or spectrum analyzer). I got there once but just one more tweak destroyed it and was never able to get it back quite as good. I had to settle for about 4 db loss thru the unit. The 439 unit tuned better producing about 1 1/4 db loss with about a 6 mhz bandpass. Here are some notes for the brave soles who just want to prove that they can do it.

1. Built it with at least 1/8" thick aluminum or copper for all sides and top.
2. If possible weld (aluminum) or solder all seams.
3. If a screw together approach is done be sure to have a screw at least every inch.
4. A screw must be placed opposite every internal rod.
5. Hold dimensions to at least 1/32" tolerance.
6. Allow for some way to adjust the length of the rods slightly.
7. The "I" dimension below is the free space 1/4 wavelength center frequency of the filter.

I built both filters with 1/4" aluminum for the sides and ends with 1/8" aluminum for the top and bottom. Tom KA8ZNY was kind enough to weld all seams (very professional job by the way - unlike a commercial filter we bought for 427 mhz) except for the top which I put together with 4-40 screws every inch around the periphery. The rods were 3/8" dia anodized aluminum (439 mhz) and 1/4" (1280 mhz) purchased at the hardware store. the adjustment screws in each case were 1/4-28 bolts thru tapped holes in the sides. The electrical results follows:

439.25 mhz filter... 1.2 db loss flat +- 0.5 db from 438.5 to 443.7 mhz & down >30 db @ 435 & 447 mhz.

1280 mhz filter... 4.0 db loss flat +- 1.5 db from 1277 to 1282.3 mhz & down >30 db @ 1272 & 1288 mhz.



439 Mhz	0.50	3.58	7.34	11.29	15.24	19.00	22.07	22.57	6.69	0.57	6.25	6.15	2.50
1280Mhz	0.50	3.40	6.80	10.36	13.91	17.32	20.22	20.72	2.30	0.19	2.02	2.00	2.00

Note: dimension M is the total interior height of the filter. The rods are located halfway between this point.

If anyone has had construction experiences with filters of this type, I would like to hear from them.

BUILD AN ATV LINE SAMPLER...

A MOST IMPORTANT PROJECT!!!

OK guys..where it is! I guarantee that this item will be the most important piece of equipment in your ham shack second only to your camera, transmitter and receiver! If you want to really know what kind of signal your transmitter is producing without relying on reports, then you need this one. I've been preaching for years that an "on-the-air" signal can NOT be monitored reliably by viewing it on a companion receiver because there are too many variables: resolution limitations of the receiver, ghost pickup by reflections and most important the reliability of your buddy watching it and trying to make you feel better by giving a good report. I could go on but I hope I've got your interest. Put aside that antenna project and tackle this one first.

Circuit description:

The line sampler extracts a small portion of the RF signal in the transmission line via the probe. It then rectifies it in the 1N23 diode and amplifies it in the op amp for display on an oscilloscope. The input 10 K resistor forms a current load for the diode while the 2.2k resistor at pin 3 isolates the diode from the op amp. The 2.2k resistor (pin 6 to 2) along with the 100 ohm resistor sets the op amp gain of 23 ($2200 + 100/100$). The resultant signal at pin 6 can drive about 5 volts into a 1000 ohm load. The output signal here is determined by the probe loop proximity to the transmission line. The closer the pickup the larger the output. Sufficient gain is available to produce above 2 volts at the output, probe closest to the line and as little as 5 watts of RF. If that can't be obtained, try another diode..there is a large variation in sensitivity between a 1N23 (poorest) and a 1N21WE (best). The circuit is DC coupled so a CW carrier can be read as well as the AC video components.

The variable gain AC coupled post amplifier can be connected to a video monitor. Not shown but definitely possible is the inclusion of a small DC millivolt meter connected to the scope point calibrated in "average" watts. Calibration is done by sliding the tube into the "T". When calibrated, solder it in place. It's important to have a device like this because you can adjust the transmitter and see directly the affect even though it may not be evident in the actual picture. I've calibrated my scope with the aid of a Bird watt meter in the line with the sampler and an CW RF carrier. I read the Bird and marked the corresponding negative going voltage on the scope which corresponds to power. Voile! I've now got a peak reading oscilloscope watt meter.

There are two basic parts to this sampler - the probe and the amplifier. If you own or know where to get a Jones Micromatch type of coupler, then you only need the amplifier section. The coupler is readily available at hamfests for about \$6 to \$15. It comes as either a single or double unit and under various names. If a Micromatch type coupler is used, the bypass capacitor in the plug must be removed. Then a standard single contact microphone plug is best substituted for the original. The amplifier must be located within a couple of inches of the plug and kept well shielded. If you can't find a Micromatch, then my tube probe is just as wood.

Items needed:

1. Copper "T" fitting with (2) 1/2" and (1) 3/4" outlets. No modifications required here.
2. (2) "N" female fittings modified by cutting or filing off flanges flush with body.
3. Cut a 1 1/2" piece of 1/2" copper tubing with a tubing cutter so as to leave an internal burr.
4. 1 1/2" to 2" piece of 3/4" copper tubing to use as a probe and amplifier housing.
5. 13/16" x 1 1/2" piece of blank copper clad glass epoxy pc board material.
6. Cut a 13/16" disk of pc board material so it fits snugly inside of the 3/4" copper tube. Drill a 1/4" hole in the center for diode holder. Trim or file off approx 1/16" of copper all around perimeter of disk on one side only and trim about 1/32" around the 1/4" hole on the side opposite the perimeter trimmed edge..
7. (1) 1N21 or 1N23 diode with removable end caps. These are common on diodes of this type but not all. Check to make sure you get one that the ends pull off (used to reverse the diode polarity).
8. Op amp. Use Linear Technology #LT1252 or Maxim #MAX404. These are inexpensive current mode video amplifiers but not too common. DigiKey Corp (1-800-344-4539) has the Linear Tech part for \$2.94 ea. If necessary, I could order from the manufacturer if enough people want them. Let me know.
8. Most resistors and capacitors common variety as shown on schematic.
9. Power supply. Mine is rated 9vdc @ 300 ma. Other supplies with 10-15 vdc output @ 40 ma are suitable.

Assembly notes:

Place disk 1/4" inside tube with the trimmed edge out. To aid soldering, place 4 pennies in a stack on the table and place tube with disk over them. Press the disk tight against pennies to make sure it is centered. Then with a propane

torch gently heat the tube and apply solder to the opposite side of the disk periphery to solder it to the tube. Insert the diode holder into the center hole in the disk and solder on the outside only. This forms a 20 pf capacitor. Next install the 150 ohm 1/2 watt resistor across the end of the tube and solder one end to the tube and the other end (bent at right angle) to the isolated part of the disk. Now build the

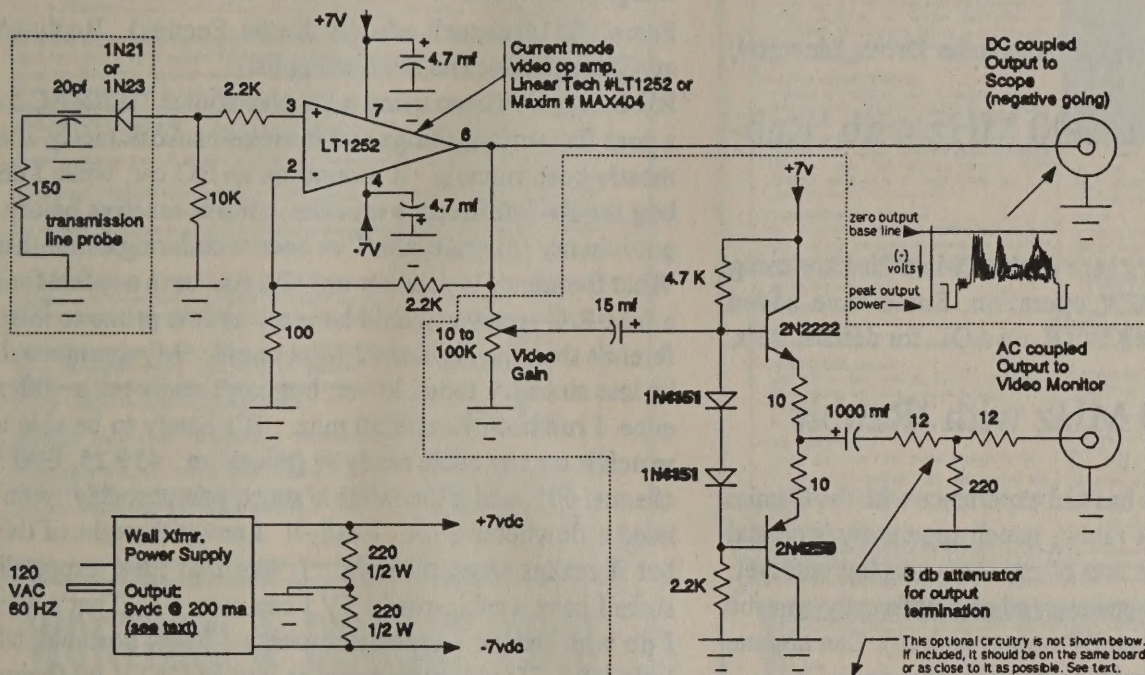
op amp circuitry as shown in the detail. Solder the other diode holder to the end of the pcb but first make sure the diode will line up with the 2 holders before soldering. Make a copper cut across the pcb to isolate the holder from ground. Only the 2 resistors will connect here. When the board and wiring is complete, slide it into the tube and solder the pcb copper to the tube at the end to complete

the job. Happy building. If you have trouble, I'll be glad to help. Art.

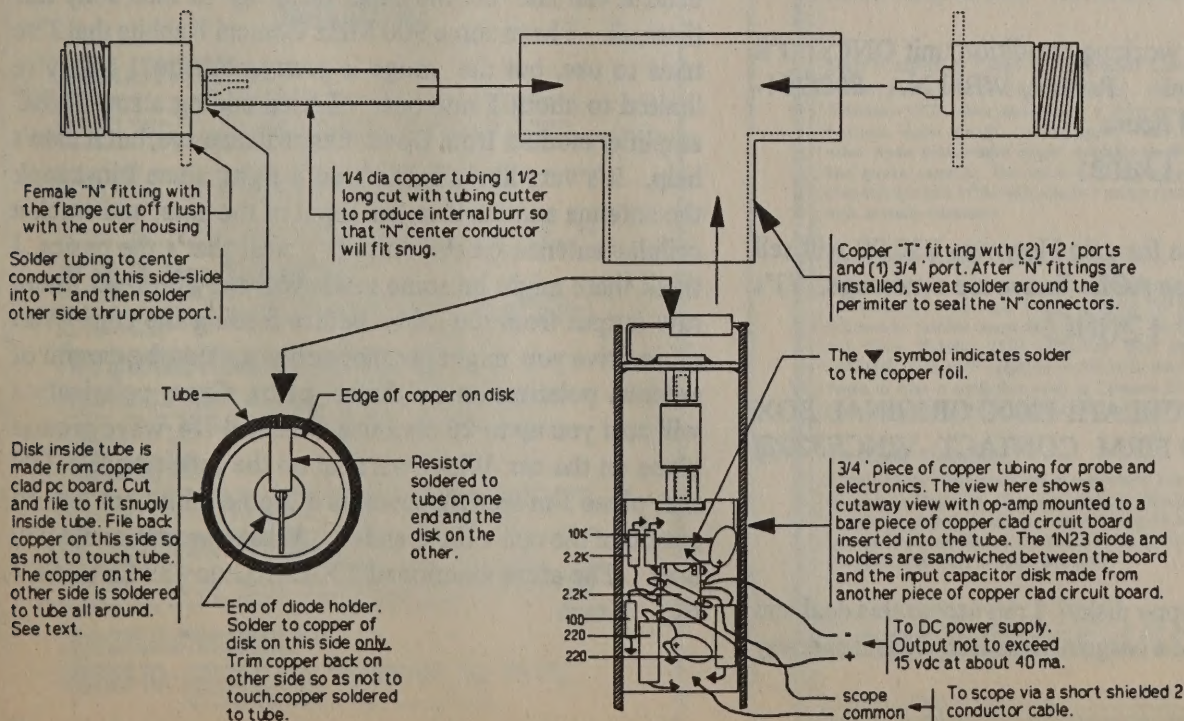
.WA8RMC

WA8RMC VIDEO SAMPLER

Schematic



Probe construction



Subject: ATV Mailing List, 900 MHz Amps, Latest ATVQ Issue

From: 72457.1577@compuserve.com (Mel Markowitz)
To: ATVQ@aol.com (ATVQ)

Hi Henry, I'm putting together a crossband repeater and would like to know if you have any leads on a good quality linear amp for 923.25 output (100 watts or so). I'm using a PC Electronics transmitter to drive a Downeast Microwave amp to about 18 watts. Thanks for your help and reply.

Mel Markowitz, K2JWD, 207 Alexander Drive, Linwood, NJ 08221

Subj: Re:ATV @ 900 MHz with 'Rabbit'

From: Bruce N0CV

Hi Jim, 3 or 4 ATV'ers here in the Twin Cities are using rabbits for portable ATV operation. Some have added "bricks". Contact Rollie KB0GL on AOL for details. 73's, Bruce

Re:ATV @ 900 MHz with 'Rabbit'

From: John H Davis

I'm wondering if anyone has had experience with the Gemini VC-5000 version of the rabbit, which apparently is crystal controlled. I don't have one of my own to play with yet, but the antenna seems to be mounted a bit differently (maybe not quite as easy to add an RF output jack to). Can anyone shed light on this? Thanks.

Subj: ROBOT 1200C

From: Roland 67

Wanted good to mint working condition unit ONLY! I'll pay shipping anywhere! Roland, WB6LNA 800/264-7662 Ext 5 anytime 24 hours

Subj: Re:ssv Date:

From: Omega71

Hank I have a Pasakon for sale New was 230.00 will sell for 180.00 Omega71 on AOL Leave me a message...73's

Subj: ROBOT 1200C

From: VINCE320

I HAVE AN IMMACULATE 1200C ORIGINAL BOX AND MANUAL 850 FIRM CONTACT VINCE320@aol.com

Subj: disks

From: Jeff KF2RC

Do you use a lot of floppy disks? I ran across this deal and it seemed somewhat of a bargain Here it is. This is the way

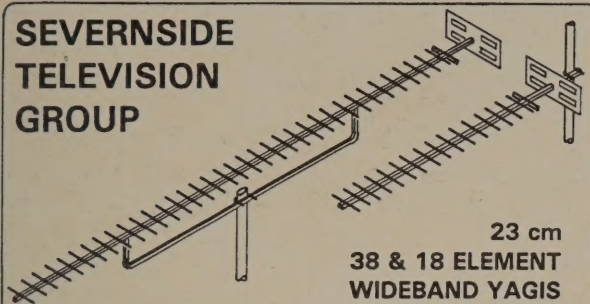
his add reads Verbatim. Prelabeled 3.5 HD \$32.00*
Prelabeled 3.5 DD\$24.00* Prelabeled 5.25 HD
....\$20.00* Prelabeled 5.25 DD \$12.00* *Per 100.
Packs of 50 also available. For more information contact:
Richard at (212)344-2149

Subject: Re: Any thoughts on SuperCircuits "PowerPlate FM ATV"?

From: fkl1@cornell.edu (F. Kevin Feeney) Reply-to:
atv@irony.com (The atv mailing list)

RE:Steve, I've been using a PC electronics TXA5-RC for a year for various things and it seems to work nicely. I've mostly been running it around on an RC car, while I debug the RF interference into the control receiver before I put it in my 1/4 scale cub. I've been wondering about that. What frequency is your car on? Do you have any feel for if a 6 M R/C receiver would be more or less prone to interference than the regular 72 Mhz ones? My guess would be less since it's tuned lower, but can't really tell a difference. I run both 72 and 50 mhz. It's handy to be able to watch it on any cable ready tv (mine on 439.25, CATV channel 60), and if the range is short, you probably won't need a downconverter. Really?! I never thought of this, but it makes sense all right. I like that idea, especially since I have a cable-ready TV I can use. :-) That's what I do with the car - especially with a 12 volt portable. My little RS LCD will tune down as low as CATV 60 (below channel 14 UHF), but that's the only channel in the atv band it can hit. On the other hand my 13 inch sony hits them all. I have some 900 MHz Gemini Rabbits that I've tried to use, but the range is pretty pathetic. They're limited to about 5 mw out. I tried adding a small NEC amplifier module from Down Easy Microwave, but it didn't help. It's very likely I didn't do it right, since I just took the antenna and ran it to the input of the amp, and stuck a cellular antenna on the output. well that's the basics. I think there might be some mods you can do to get more raw output from the rabbit before feeding the amp. With more drive you might get more output. Also, be careful of antenna polarization on direct paths. Cross polarization will cost you up to 26 db. I use a vertical 1/4 wave ground plane on the car. With a vertical on the receiving TV. ON the plane I'm leaning towards a dipole with bent legs to get rid of the null off the ends. What transmitter did you use? The afore mentioned TXA5-RC on 439.25 (CATV 60) Kevin

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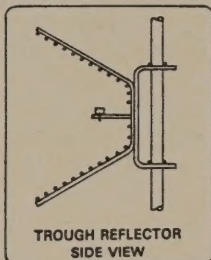
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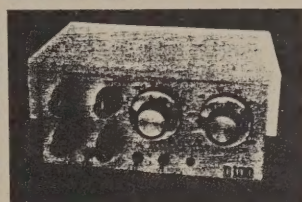
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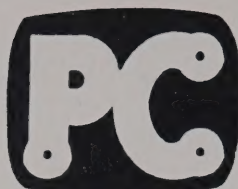
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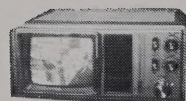
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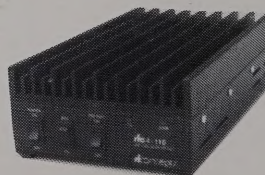
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